

Pasture Fertilization Pays Seen and Unseen Dividends

By **JOHN CIPPERLY**
Croplife Washington Correspondent

WASHINGTON—For every \$1 spent in fertilizing permanent pasture the farmer obtains \$1.30 in value. That is the opinion of pasture and forage scientists at the U.S. Department of Agriculture Experiment Station at Beltsville, Md.

The economic aspects of the use of fertilizer in pasture development and management have not been thoroughly explored except in some instances where state colleges have undertaken long range programs.

The important aspects which are yet to be developed are the end product results of pasture and forage crops—such as improvement of yields of dairy cattle and development of beef animals.

EDITOR'S NOTE—Special material on fertilization and maintenance of pasture lands appears in this issue of Croplife. Presentation of this material is designed to help mixers, formulators and retailers tap the big potential market of grassland farming. This issue is slanted toward the Southern states; other issues for the Midwest, West and Northeast will follow.

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Even without those final measurements these USDA officials still contend that for every \$1 the farmer spends for fertilizer materials he gets back \$1.30.

Pasture and forage acreage fertilization is one of the unsung heroes of the plant food economy. It may not show the dramatic results which are apparent in corn and potato production. But USDA

scientists emphasize that fertilizers can make pasture and forage crop fertilization pay off.

Pasture fertilization also pays unseen dividends in the form of better quality pasture. Here better varieties of pasture crops are developed making for improved rations for cattle.

The opportunity for pasture and forage crops is not foreclosed by high yielding corn acreage. Pasture pays an additional dividend in its soil building qualities.

A Beltsville expert told Croplife Missouri experiments showed that acreage yielding only 50 bu. an acre of corn would return a higher profit as good pasture. This does not infer that Beltsville advocates a wholesale shift from corn to

(Continued on page 8)

Drouth Loss Climbs In Northeast States

Quick Rain Needed To Prevent Disaster

BOSTON—A soaking three-inch or four-inch rainfall is needed to save Massachusetts farmers from disaster in one of the worst early summer drouths in years, agricultural authorities said here July 8, the beginning of what was termed the "critical" week for the farms, already faced with an estimated \$1,000,000 crop loss.

Walter E. Piper, state marketing specialist, made a special survey of drouth conditions in the Bristol County "salad bowl," one of the state's most hard-hit concentrated farming districts. He said that unless adequate rain fell during the week, thousands of acres of vegetables in that area would be lost. In addition, he said, thousands of small plants awaiting transplanting for second crops would have to be thrown away because of ground too dry to support them.

The cranberry plants, already burned dangerously brown, would be lost altogether, Mr. Piper said. "There's a \$400,000 loss there now, and it is getting worse by the hour. Some vegetables can come back after a dry spell, but not cranberries."

Another serious threat to farming is that farmers may not be able to grow a second crop of hay. "The hayfields are turning to useless straw and this will mean additional expense to farmers who will have to buy feed later on," Mr. Piper said.

Many farmers are saving crops by the use of irrigating systems, but not all can afford them, and in some cases there is insufficient water supply. Somerset and Swansea have cut farms from the town water supply.

Bristol County is especially vulnerable to continuing drouth, state agricultural experts said. Thousands of acres of vegetables in that county will be lost if there is no rain soon.

Damage from the drouth is not concentrated on any particular crop. Sweet corn is doomed unless a heavy

(Continued on page 8)

California Firm Plans \$4 Million Nitrogen Plant

SACRAMENTO—The California Ammonia Co., a jointly owned enterprise of 400 farmers, and the Best Fertilizer Co. have completed organization. At a stockholders meeting in Stockton, Cal., directors were elected and plans announced for a \$4,000,000 plant at Lathrop, Cal., to produce 25,000 tons of anhydrous ammonia annually.

Bernell Harlan, Woodland, Cal., farmer, was elected president of the new concern. Lowell W. Berry, president of the Best company, is chairman of the board.

Other farmer members of the board are Adolph Merwin, Clarksburg; K. R. Nutting, Salinas; Lloyd Harnish, Fresno; David Petz, Tracy; C. Martin Wilmarth, Grimes, and Lawrence Baldwin, Bakersfield.

Construction of the new plant is scheduled to start in 30 to 45 days with completion expected late next summer.

Mississippi Firm Lets Contract for Nitric Acid Plant

YAZOO CITY, MISS.—Owen Cooper, executive vice president of Mississippi Chemical Corp., has announced the award of a contract to the Chemical and Industrial Corp., Cincinnati, for design and construction of a 150-ton-per-day nitric acid plant.

The plant is to be located at the firm's existing facilities at Yazoo City. This will be the fifth nitric acid unit of the high pressure design to be installed by the company. The plant will go on stream in early 1958.

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Nutrient Supplies for 1956-57 Slightly Less Than for Year Earlier

— See Tables on Page 20 —

WASHINGTON—The total supply of nitrogen, phosphates and potash for the 12 months ended last June 30 is currently estimated to have been slightly less than that for the previous fiscal year, the U.S. Department of Agriculture reported last week in a review of the Fertilizer Situation for 1956-57.

USDA said that the estimate was based on industry's reported rates of production rather than on capacity to produce, since capacity is in excess of actual output.

Substantial increases in exports of phosphorus and potash were noted.

The Fertilizer Situation, 14th in a series of annual reports, was prepared by C. A. Graham, administrative assistant, under the supervision of Harold H. Shepard, chief, agricultural chemicals staff, Food & Materials Requirements Division, Commodity Stabilization Service, USDA.

During 1956-57 the quantity of fertilizer nitrogen in all forms expected to be available for use by farmers is placed at approximately 2,265,000 tons. Since this figure is based on published figures for nine months and estimated rates of production for the remainder of the year, demand during recent weeks may require revision of this figure, according to the report.

Details of the 1956-57 estimated supply, with comparative data for two previous years, are shown in Table 1. Supply figures for nitrogen are usually somewhat higher than the net amount consumed, the report states. This is due to a number of factors. Supply data do not reflect losses incurred in the manufacture, handling and distribution of fertilizers, but are on the basis of trade deliveries reported by primary producers. Also some uses, other than plant food, are supplied out of these deliveries.

Imports of nitrogenous fertilizer materials are expected to be less in

1956-57 than in the previous year. Figures for the first eight months of the fertilizer year, compared with the same period in 1955-56, are shown in Table 2.

Exports of selected nitrogenous materials are shown in Table 3. Less ammonium nitrate was exported than a year ago, while exports of ammonium sulfate and the group reported by the Bureau of the Census as "nitrogenous chemical materials, n.c.e." showed an increase.

Expansion of domestic production of nitrogen has far outstripped the original goal set by the Defense Production Administration in 1952, the report notes. This goal, which was to

(Continued on page 20)

Brea Chemicals, R. T. Collier Merge

LOS ANGELES—Union Oil Company of California has announced the merger, effective July 1, of two of its subsidiary corporations, Brea Chemicals, Inc., operating the petrochemical field, and the R. T. Collier Corp., operating in the carbon and allied fields.

The new corporation will be known as the Collier Carbon and Chemical Corp., with headquarters at 714 West Olympic Blvd., Los Angeles. This corporation will continue to manufacture and market Brea Brand chemicals and will conduct its petrochemical and carbon businesses as corporate divisions.

R. T. Collier, as president, will be chief executive officer of the new corporation. For the past 11 years he has been president of the R. T. Collier Corp.

Homer Reed will be vice president of the new corporation. Mr. Reed has been president of Brea Chemicals, Inc. since it was organized October 28, 1952. Prior to that he had been chief engineer for Union Oil Co.

FLORIDA EXPERTS SAY . . .

Apply Fertilizer in August, Gain Adequate Winter Feed

That August is the best time to fertilize Florida pastures for winter feed is the point made by a recent article in the "Sunshine State Agricultural Research Report," issued by the Florida Agricultural Experiment Station, Gainesville. The article, authored by William G. Blue, Nathan Gammon, Jr. and H. W. Lundy, said that an inadequate supply of feed from December to March is a perennial problem for Florida cattlemen. To meet this shortage, farmers and ranchers are using purchased feed and feed supplements, stored hay or silage and frosted forage standing in the pasture.

Frosted forage offers the lowest cost solution to the problem, pro-

vided quality and quantity of forage is adequate. The key to the problem may be in proper and properly timed fertilization, according to data obtained near Gainesville and at the Suwannee Valley Station at Live Oak.

Grass pastures for fall or winter grazing in Northern Florida should be fertilized some time during the last half of August. As the fertilization date is delayed after Sept. 1, rate of growth and total forage yields are markedly reduced. Apparently this is due to reduced night temperature. Farther south, the cattlemen may wait a little longer to fertilize.

Tests were conducted with Pan-

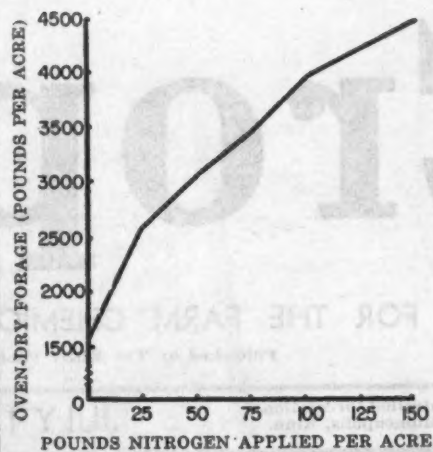


Fig. 1.—Yields of pangolagrass fertilized in late August.

golagrass and Argentine bahiagrass pastures near Gainesville and with Coastal bermudagrass at the Suwannee Valley Station near Live Oak. The pastures were grazed or mowed before nitrogen was put on in late August. Nitrogen was applied at increasing rates to 150 lb. an acre and all plots received 300 lb. 0-10-20 an acre.

Here are some striking observations made from the studies:

Yields of all three plants increased markedly when rates of nitrogen fertilization were boosted. (Figure 1.) Without nitrogen, pangolagrass yielded only three-fourths ton an acre; with 150 lb. nitrogen, it yielded more than two tons. Coastal bermudagrass responded very similarly, but Argentine bahiagrass yields were lower.

Protein in the hay increased in the same manner as forage yields, (Figure 2). There was a decline in protein values as winter progressed, but the interesting point is that the decline, at all levels of fertilization, was relatively small. Grass that was of good quality in October retained a satisfactory protein content through the winter. The unfertilized grass had an inadequate protein content throughout the season.

Losses of potassium, phosphorus and calcium varied, but the amounts remaining were probably adequate for animals at all times. Potassium losses ranged between 60 and 80%, most phosphorus losses ranged between 25 and 55% and calcium losses between 0 and 40%.

A higher percentage of forage might be preserved for winter feed by cutting it for hay soon after the first frost. After a killing frost, the forage dries rapidly and following a few dry days the moisture content drops to 10 to 15%. After drying and on sunny days the forage could be cut and baled immediately. Any rainfall after frost would cause some loss of soluble materials which might reduce palatability. By mowing early, the possibility of lodging would also be reduced.

The cattleman should consider these management factors to get the most benefit from his grass pastures for winter feed:

1. He should inspect his fields to be certain that insect populations are

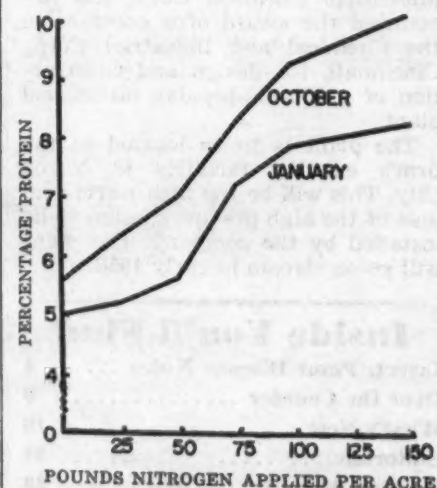


Fig. 2.—Percentage protein in oven-dry pangolagrass forage before and after weathering.

not building up and destroying the grass.

2. When grazing, cattle should not be permitted to tramp over the entire reserve pasture. Instead, fresh areas should be opened up when needed. Otherwise, forage quality will decline because the more nutritious leaves are eaten first and a large amount of grass will be destroyed by tramping.

3. In northern Florida, the maximum rate of fall-applied nitrogen on pangolagrass should probably not exceed 75 lb. nitrogen an acre. Higher rates have frequently resulted in severe winter-killing of grass.

Reserve grass pasture for feeding in winter will not provide as high quality feed as good hay or ensilage from the same quality material. Nevertheless, when properly fertilized and managed, it does provide the cattleman with limited equipment a reasonably satisfactory method of management.

Good Management Calls for Fertilization

COLLEGE STATION, TEXAS—A cultivated pasture's production can be effectively measured by its management! Once a pasture is established, good management usually means good grazing, according to E. M. Trew, extension pasture specialist at Texas A&M College.

Continuous grazing can slash forage production in half, but these losses can be reduced by cutting pastures into small blocks with portable electric fences and rotating cattle—allowing ample time for regrowth between grazings. Such a system of rotation grazing maintains vigorous plants while providing rest periods for building good root systems, he says.

Surplus forage may be used as hay or silage, advises Mr. Trew. Instead of wasting large portions of lush spring growth, efficient producers will store it for winter use or possible summer drought. Adequate feed reserves supplement good pasture management, he adds.

Properly-timed mowing means added production of vigorous, more palatable pasture plants. Mowing controls undesirable weeds, conserving valuable plant food and moisture! Another benefit of mowing lies in the tendency of this practice to revert maturing plants to a growing, vegetative, more nutritious condition.

No pasture management program is complete without adequate fertilization, declares the specialist. A ton of grass hay contains about 30 lb. nitrogen, 10 lb. phosphoric acid and 30 lb. potash, he points out, and legume hay contains about 30% more. A soil test will determine the type and amount of fertilizer needed.

Cattle grazing on lush, fast-growing pasture need some dry hay. These dry matter requirements can be met by providing hay racks, Mr. Trew advises, or by leaving mowed strips in the pasture for cattle to use as needed.

Jap Beetle Inspections Start in North Carolina

RALEIGH, N. C.—Inspections under the Japanese beetle quarantine have been started at the leading produce auction markets in North Carolina, according to C. H. Brannon, head of the entomology division of the North Carolina Department of Agriculture. They will continue throughout the summer.

Inspectors are stationed at Elizabeth City, Goldsboro, West Jefferson and Hendersonville. Under the federal-state quarantine, certification is needed for all refrigerator-car and truck-load shipments of fresh apples, peaches, cabbages, beans and corn-on-the-cob. The Japanese beetle quarantine now includes 60 entire counties in North Carolina.

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WORLD REPORT

By **GEORGE E. SWARBRECK**
CROPLIFE Canadian and Overseas Editor

In recent years the fertilizer industry in Spain has increased production greatly in response to a government policy aimed at supplying more nitrogenous fertilizers for the vast agricultural expansion program.

New plants have been established, some by private investors, others with state assistance through the National Industrial Institute.

Spain's agriculture currently uses more than 150,000 tons of elemental nitrogen a year, a total equivalent to about 750,000 tons of fertilizer. Consumption has increased by 50% in the past 10 years. The domestic production facilities, at the present time, turn out about 40,000 tons of nitrogen a year, less than 25% of the total needed.

The shortage of power is cited as the reason for the slow growth of domestic production and considerable quantities of ammonium sulfate and ammonium nitrate have to be imported.

Enough potash fertilizers are manufactured to meet home needs, and there is a small surplus for export. Capacity of the superphosphate plants is around 1.8 million tons with production off-take rated at 1.2 million tons.

One new factory is in process of construction with a capacity of 100,000 tons a year. Other plants are also in the stocks.

Spanish Pesticides

The production of insecticides has been retarded by the lack of raw materials of the newer types, DDT and BHC are produced in Spain, but supplies have to be bolstered by imports. Also manufactured locally are some mercurial organic insecticides and 2,4-D. There is still a tendency among farmers, however, to place reliance on old fashioned insecticides.

Spray Drift Guard

A protective device to protect against spray drift has been developed in Britain. A polythene shield has been made to cover the boom used in spraying hormone weedkiller at the National Fruit Trials Station at Brogdale Farm, Faversham, Kent. The polythene is on a light steel frame in two sections which fit one on each side of the tank. Both ends of the shield are sealed and 6 in. of polythene drag along the ground.

Sulfur Mine for Sale

A sulfur mine on the island of Nisires in the Aegean Sea has been offered for lease or sale. Making the offer is E. Papadiamtopoulos of Athens.

The mine, reported as covering an area of about 615 acres, is located near the village of Pali, a small port on the island. Mr. Papadiamtopoulos, who claims title to the mine, says that a survey conducted in 1910 by a French mining expert, shows the existence of about two million tons of sulfur visible deposits with an average sulfur content of over 30%.

New Greek Factory

The Greek authorities report that tenders for the construction of the proposed fertilizer factory at Ptolemais have been received from six foreign firms. The countries involved are Italy, France, U. S., Belgium and West Germany.

Brazilian Needs

A firm in Brazil is negotiating for the purchase of fertilizers from U.K. suppliers. Irmaos Iochpe S.A., Caixa Postal 1870, Porto Alegre, is inter-

ested in obtaining upwards of 12,000 tons of fertilizers.

Needed are mixed granulated fertilizers, formulas 6-3-6 and 10; triple superphosphate (granulated) 45-47% P₂O₅; ammonium sulfate, 20.5-21.5% N; potassium muriate 60-63% K₂O.

Nitrogen in Portugal

The electro-chemical industry in Portugal had a good year in 1956 because of the heavy rainfalls experienced. This enabled the hydro-electric companies to step up the production of power.

Amoniaco Portugues S.A.R.L. of

Lisbon says that in 358 working days during 1956, it was able to produce 42,684 tons of ammonium sulfate against 35,197 tons in 1955.

As the hydro-electric production of Portugal expands, it is intended to increase the production of fertilizers by electro-chemical processes.

The Amoniaco company reports that it has ordered equipment for the production of ammonia by the extraction of hydrogen from heavy petroleum using the Koppers Totzek process. Completion of the project is set for 1958, and the capacity will be 70,000 tons of ammonium sulfate a year. The company also plans to build a plant for the production of ammonium nitrate and is seeking authority for another facility to produce 50 tons of urea a day.

EXTENSION DIRECTOR

PULLMAN, WASH.—C. A. Svinth July 1 became director of the Washington State College Extension Service. He succeeds R. M. Turner, who retired after 39 years of service.

Plant Food Review Receives Award

WASHINGTON—Plant Food Review, the National Plant Food Institute's quarterly magazine, received a first award in the annual Middle Atlantic Association of Industrial Editors' publications contest recently. The Review was entered in the division for "external" magazines.

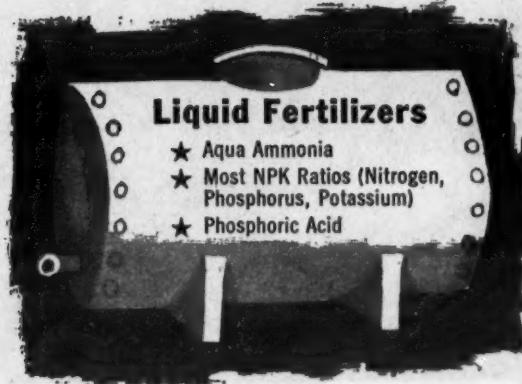
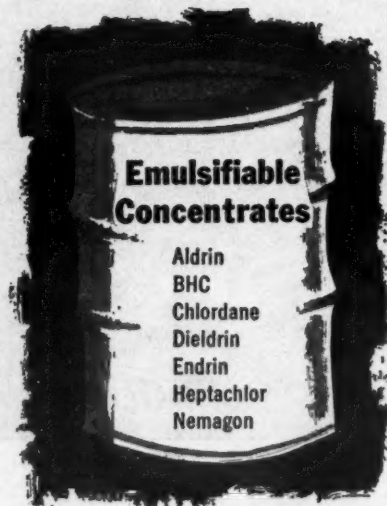
Delbert L. Rucker, editor, accepted the award at ceremonies in the National Press Club where the association was holding its final meeting for the 1956-57 year. Mr. Rucker also was elected president of MAAIE for the coming year and will hold this office until June, 1958.

PILOTS KILLED

TOWNSEND, MONT.—Penn Stohr, 55, and Robert Vallance, 28, pilots for Johnson Flying Service, Missoula, Mont., were killed recently when their weed spraying Ford tri-motor crashed and burned near here.

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INSECT AND PLANT DISEASE NOTES

Lygus and Fleahoppers Plentiful in Arizona

PHOENIX, ARIZ.—Insects, especially Lygus and fleahoppers, constitute the biggest threat to cotton at the present time, reports Jim Carter, Maricopa county agent. Extremely high populations of these two pests have been reported in all sections. Counts ranged from 20 in the Queen Creek area to more than 100 near Buckeye. A good portion of the population is made up of nymphs, indicating that the infestations are the result of build-up rather than migration. Leaf rollers are beginning to build up in the Tolleson and Glendale areas, but beneficial insects may help keep this pest under control. Collops beetles and Orius can be found in large numbers in most fields. Stink bugs are being found in the Peoria-

Glendale area, while leaf perforators are on the increase around Buckeye. A few mites and loopers have been reported at work in most sections.—J. N. Roney.

Rain Kills Minnesota Grasshoppers

ST. PAUL, MINN.—Recent heavy rains have helped reduce grasshopper numbers around Minnesota, according to A. W. Buzicky, associate state entomologist and L. K. Cutkomp, entomologist at the University of Minnesota. They report that rains during the hatching season killed a large number of the two-striped hoppers that commonly hatch along roads and highways.

As a result, these particular hoppers won't be as much of a problem in many areas as they have been in some previous years. The entomolo-

gists add, however, that the rains had no effect on red-legged grasshoppers that live in hay fields. These hoppers have just started to hatch and can be expected to be out in large numbers in many areas of the state after first hay cutting is completed.

Pink Bollworm Scarce, South Texas Reports

CORPUS CHRISTI, TEXAS—Cotton bloom inspections in eight South Texas counties have revealed the lightest pink boll worm infestation in several years, according to Hugh Cavitt, supervisor of inspection work in this area.

Mr. Cavitt's crew of inspectors examined cotton in 331 fields. Pink boll worms were found in 83 fields, but the infestation was comparatively light. The men inspected a total of 1,258,362 blooms and found only 566 live worms.

The heavy infestation of insects expected in West Texas this sum-

mer has also failed to materialize, according to various county agricultural agents. These experts believed a wet year would bring out a horde of insects.

"Trouble is it's been too wet," said Charley Green, county agent of Midland county. Every time the thrips and fleahoppers got set for a start, along came a hard-driving rain and killed them off."

Mr. Green says some of the older cotton is being poisoned, and now that the rains have slowed down, there will be a quick build-up of insects.

In the irrigated areas around Lubbock, infestations have also been light. A light infestation of fleahoppers, aphids and thrips has been reported in several areas, but very little poisoning is being done yet.

Northern Alabama Has Boll Weevil Loss

ALBERTVILLE, ALA.—Serious damage to the cotton crop in Marshall county and the Sand Mountain area of North Alabama is likely, unless immediate steps are taken to bring the boll weevil infestation under control, W. L. Martin, county agent, declared July 2.

A recent check made in the area indicates a heavier infestation at this early stage than any time since 1950, Mr. Martin said.

Most of the weevils seen are old crop weevils which survived the winter, but Mr. Martin warned that new generations will be hatching "any day now."

Leafhoppers Thick in Missouri Alfalfa Fields

COLUMBIA, MO.—Virtually every alfalfa field in the state is showing yellowing resulting from feeding by leafhoppers. Much of the hay is being cut, but this will not prevent the next cutting from being damaged.

Except in the extreme northern counties, we are now past the point of treating for the first brood of European corn borer. Such a high percentage of borers have already gone into the stalks, it is not practical to invest in control this late.

In the bootheel area, most of the borers are now pupating, and the peak of egg laying for the second brood will probably come during the week of July 12 to 19.

Several different insects are working on soybeans, but fortunately instances of severe damage are scattered, and so far, no great acreage is involved.—Stirling Kyd and Geo. W. Thomas.

Insects and Plant Disease Plague Illinois

URBANA, ILL.—Late blight of tomato has been found recently in commercial canning fields in McHenry county, reports M. B. Linn, acting head of the University of Illinois plant pathology department.

This disease may appear soon in other areas of the state where southern-grown transplants were used and then spread to other commercial fields and home gardens.

Mr. Linn points out that late blight caused a \$40 million loss in canning tomatoes in 1946 in the northeastern and central states. It also destroyed tomatoes in home gardens. At that time growers and gardeners were not prepared to combat the disease.

In many areas grasshoppers are still concentrated in fencerows, roadsides, grass waterways, and ditch banks. Control them when they are concentrated in these areas. Not only are less time and expense involved, but at this time the grasshoppers have not damaged any crops. Tiny grasshoppers are also abundant in some hay-crop fields throughout central and northern Illinois. Feeding is not yet apparent, but may become notice-



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able in a few weeks. Now is the time to control them, before they reduce yields or migrate, at cutting time, to soybeans or corn.

Fall armyworms are attacking small corn in the southern third to half of Illinois. They feed in the whorl of the plant. When full grown, they leave the plants and pupate in the soil.

Time for optimum control of corn borer with insecticides is past in central Illinois. Any fields warranting the use of insecticide should therefore be treated immediately or not at all. After the borers enter the stalk they cannot be controlled with insecticides.—H. B. Petty.

Florida Farmers Busy Fighting Peanut Pests

MARIANNA, FLA.—Control of weeds, Southern blight and root-knot of peanuts is under way in Jackson County, according to W. W. Glenn, county agent.

Farmers are watching blight tests with interest because loss from this disease has cut peanut yields up to 20% in recent years.

Final results of the blight control efforts will be determined at harvest time this fall, it was indicated.

Corn Borer Heavy in Southern Iowa

AMES, IOWA — European corn borer larvae range from newly hatched to full-grown in the southern half of Iowa. (July 6) Populations in tall, early-planted corn are heavy. In Wapello County, 60 inch corn was 100% infested with 600 borers per 100 plants, 50 inch corn (2 fields) averaged 64% infested with 1,600 borers per 100 plants. In Mahaska County, 1 field of 50 inch corn was 12% infested with 460 larvae per 100 plants. Other counties report similar heavy infestations. New egg masses are still appearing in Boone and Polk counties. Moth flight is about over, but as long as a majority of the larvae are still found in the whorl, control measures will be profitable.

Wireworm damage is showing up even in fairly tall corn. Corn 15-18 inches tall is being destroyed and another tall field at Grimes was reported dying as a result of wireworm attack. Damaged plants that are still alive "sucker" excessively and are stunted.

Corn root aphids are quite common in corn. Infested plants show lack of vigor and slow growth.

Grasshoppers are beginning to migrate into soybeans. Farmers should watch small grain as it ripens and treat field edges before cutting. Hoppers may still do serious damage.—Harold Gunderson.

Plant Diseases Under Way, Indiana Report Says

LAFAYETTE, IND.—Purdue University plant pathologists have reported that the prolonged wet weather has been "very favorable" for the development of common home garden tomato diseases.

Early blight is already present on leaves of early set plants, and septoria leaf spot is showing up in southern Indiana.

Late blight could also be a problem this year, the pathologists report. Several fruit rots may destroy ripe tomatoes, especially towards the end of the season.

Orchard Pests Found in Indiana Locations

VINCENNES, IND. — Continued heavy rains have fallen in several sections of Indiana and reduced spray residue deposits. Early apples and peaches are being harvested around Vincennes.

Several orchards in western Kentucky and southern Indiana have severe infestations of oriental fruit moth. The third brood of oriental

fruit moth is also active at the present time. Fresh twig injury, indicating that larvae were active, could be readily found in Johnson County on July 6.—D. W. Hamilton.

North Carolina Expects Big Infestation of Weevils

RALEIGH, N.C.—Boll weevil appears in many fields in the Southeast. The Southwest has over ten percent square infestation in spite of two and three applications of insecticide. We are now between broods so expect a real battle of the boll weevil when the next generation of adults appears.

Japanese beetle infestations have passed their peak in the coastal area, but are at their peak in Piedmont and increasing in the mountains.

Tobacco insects in general are not as harmful as last year. Flea beetles are doing light damage in most areas. Bud worms are a potential pest. Hornworms just beginning their second brood. Slugs have caused more

damage than usual this year. We are still getting many reports of damage to gardens and ornamental plantings.

Black shank, one of the tobacco farmer's greatest enemies, is widespread in Wake, Johnston, Sampson, Wayne, and Nash counties, Furney A. Todd, plant pathologist, has reported. Other reports have been received from almost every county in the Eastern Tobacco Belt.

Excessive Water Cuts Tennessee Cotton Yield

KNOXVILLE, TENN. — Heavy rains continue to cause serious damage all over West Tennessee with water still covering many fields. (July 8) Complete loss of stands have occurred in many low land fields.

Conditions are still ideal for boll weevil buildup. Square counts were made in the southern tier of counties in fields known to be infested. The average percent of punctured squares was 31% and 35% at this time last year. Some fields still have only a

few squares so counts ran higher. The heaviest infestations are in the southern counties with lighter infestations extending up to the Hatchie River and east through Jackson, Tennessee.

Light infestations of flea hoppers found in older cotton, and plant bugs continue to cause some injury in central Fayette County.

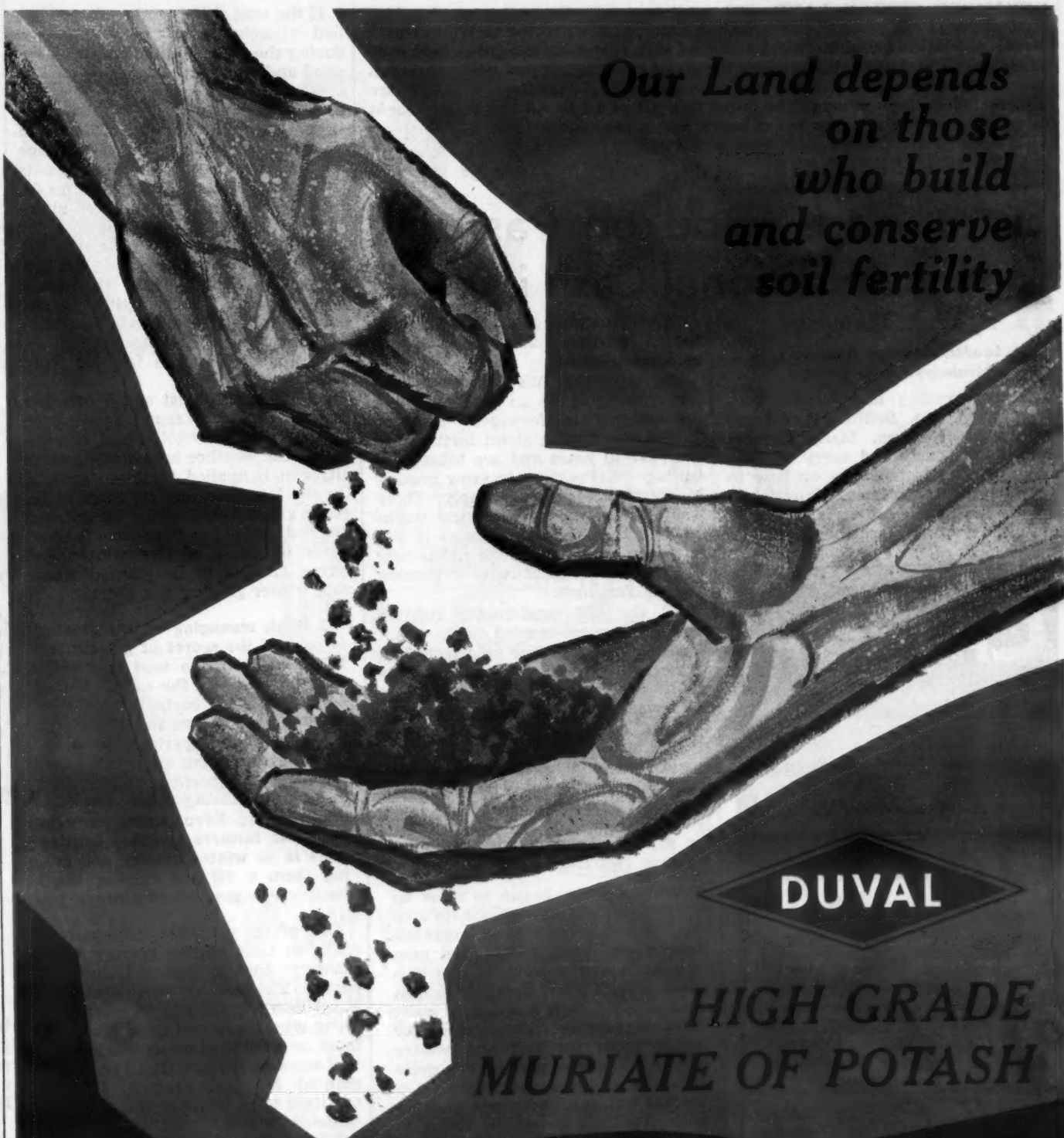
Leaf hoppers are causing some injury in rank cotton on outer edges of the fields, and one moderate infestation of aphids was found in Haywood County.—R. P. Mullett

Orchard Pests Noted in Massachusetts

AMHERST, MASS.—(July 9) It is time to spray the bark on trunks and branches of peach trees to protect against peach tree borers. Growers are advised to include trees of all ages and to plan another application in 3 to 4 weeks.

For apple growers the pests to watch are aphids, mites, and apple

(Continued on page 31)



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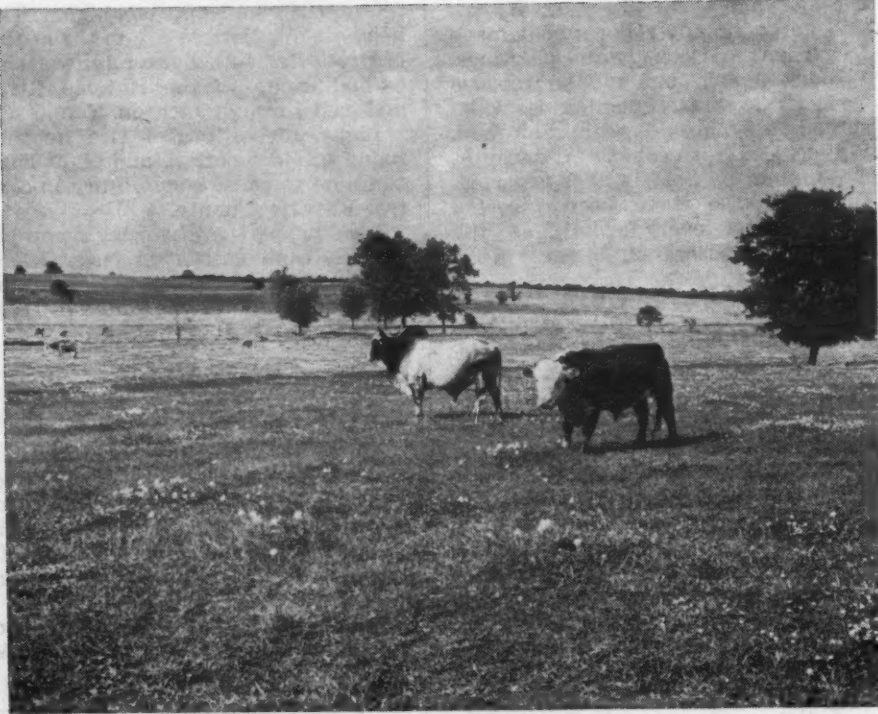
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REVAMPED COTTON LAND—This pasture was once row-cropped cotton land as far as one could see. It is now in good pasture planted to White Dutch clover and Dallis grass. Author Thompson says that complete plant food mixtures are necessary for best results for small grain in fall and winter grazing. Where formerly only nitrogen was recommended, phosphate and potash are now included. The soil should be limed to a pH of 6.0 to 6.5 to get full benefit of the plant foods, Mr. Thompson points out in his article. (USDA Photo)

PASTURE EXPERT SAYS . . .

Extra Plant Food on Pastures Means Additional Cash in Bank

By W. R. Thompson

Leader, Extension Agronomy
Mississippi State College

Winter grazing has become very popular in the Southwest for all classes of livestock. Many farmers make plans early and carry out the recommended instructions on how to get early winter grazing. Many farmers in the South say it is easier to grow early winter grazing than it is

to grow summer grazing because of the extreme heat and drouth on our summer pastures.

The thing that has caused our winter grazing to be so profitable and encouraging is fertilizer. Farmers have learned a lot about fertilizer in the past 10 years and are taking advantage of its ability to grow grazing in abundance pretty cheaply. There was a time when agricultural workers had to encourage farmers to use fertilizer on winter grazing, but now they will not plant winter grazing without fertilizer.

All the old experiments run on small grain were carried out for grain production only. Some said tests had to be set up to find out what extra plant food was needed for grazing that was not needed for grain production. Through tests at the experiment stations it was found that phosphate and potash are necessary for good fall growth of winter grazing from oats or wheat. These plant foods were once thought not too necessary for grain production and only nitrogen was recommended.

When failures began to show up in the fall on low phosphate and potash soils, even though ample nitrogen was used, the station men began to study what caused the poor growth even though nitrogen was present. Now a complete plant food mixture is recommended for small grain for fall and winter grazing and the results are quite different to what they were when we did not use phosphate and potash. The soil should be limed to a pH of 6.0 to 6.5 to get the full benefit of the other plant foods.

In the South, one of the secrets for early fall grazing is to fallow the land before planting. There was a time when farmers would hesitate to leave land idle during the late summer just to get early fall grazing.

Plantings for winter grazings are divided into three kinds. The first is small grain planted on fallowed land and fertilized highly. These plantings are made in early September. Some plant in late August. The next planting is made in late September or early October on seedbeds prepared just prior to planting. The other planting is made with a sod seeder.

These plantings are made just about the time pasture sod is becom-

ing dormant. Some of the sods being planted with the sod seeder are Bermuda, carpet, Bahia and Johnson grass. Many plantings are made on thin, rundown pastures to get grazing from cereals and build up the pasture at the same time. Many farmers go into their fields where crops such as cotton and corn were harvested and plant oats and wheat with a sod seeder.

They space the boots on the sod seeder so the plantings will be made on the shoulder of the row, then in the winter the cows can walk down the middle of the rows and graze on each side without trampling the oats and wheat. Farmers continuously tell me, regardless of which method is used, all of them have to be fertilized pretty liberally.

Recommendations for ordinary plantings are made using 100 lb. small grain an acre. Some farmers go higher than this, even up to 150 lb. grain an acre. Experiment station recommendations are 100 lb. an acre.

If the land that is to be planted has had phosphate and potash applied during the year, 60 lb. nitrogen is applied and these other two plant foods are left off, but if none has been applied, many farmers use a mixed fertilizer to get all three plant foods and then add more nitrogen. The average fertilizer application for average soils is about 500 to 600 lb. mixed goods, plus 30 to 40 more pounds of nitrogen.

There was a time when small grain was planted for grazing and then fertilizer topdressed after the grain came up. Now all the fertilizer is put out at planting time. The farmer himself determines whether more nitrogen is applied in the fall for more growth.

On the late August and September plantings, after they have been grazed down in October and November, if the weather is favorable, more nitrogen is applied for more growth. On the late plantings no more nitrogen is applied until spring for grazing. The sod seeder has caused many thousands of acres of late winter and spring grazing to be planted where once winter grazing was short.

I think managing winter grazing is part of the secret of getting the full benefit of the seed and fertilizer put out. On the early planted small grain for early fall grazing, most farmers ration this grazing to the cows and especially to dairy herds, giving them an hour's grazing after the morning milking and an hour's grazing after the evening milking. Even during the winter most farmers practice turning cows in on winter grazing and giving them a fill and turning them back on the permanent pasture.

One of the mistakes some farmers make in their winter grazing is not planting enough for the livestock owned. The grazing soon gives out. Since small grain has so many uses along with grazing, it is profitable for most farmers to plant as much as 1½ to 2 acres to the cow. If all of it were planted for just grazing, I would hesitate to recommend this much because of its cost.

I would like to outline the uses of small grain and then anyone can see it has enough uses that it is profitable to plant 2 acres to the cow. The small grain plantings can be used for grazing, part of it then can be used for grain production, part for hay, another part for silage and then another portion can be set aside to be grazed off in the spring while spring pastures are getting well established. Cows are moved from the area to be cut for a full grain production on March 1 to 15.

About April 1, livestock are moved from areas to be left for hay or silage. The areas for grazing only can be grazed until the grazing is not good any more and the area prepared and planted to Sudan or millet for early summer grazing. The land fol-

lowing small grain harvest, regardless of what use is made of it, can be profitably used during the summer to plant temporary grazing, sorghum or corn for silage, grain sorghum and a portion of it should be left to be fallowed for fall planting for early fall grazing.

Since irrigation is being used by many farmers, they find it much easier to get quicker stands in the fall and quicker growth and earlier grazing than where they depend on natural rainfall. The irrigation system is generally bought for other crops and used for grazing crops, too.

Many dairy farmers say that oats is the king of dairy feed since it furnishes grazing, grain, hay and silage. Many use the straw after the oats are threshed for bedding.

The thing that encourages me so much about our grazing program is that when people who once lived in Mississippi come back by airplane, they always comment on how different the earth is now compared to a few years ago. Much of it was once brown and now it is green.

Give the cows all the grazing and feed they want and they will really respond with production.

Agronomist Advises Pasture Fertilization

STATE COLLEGE, MISS.—Good pastures most of the year require the use of fertilizer, according to W. R. Thompson, agronomist of the Mississippi agricultural extension service.

"The farmer who makes up his mind not to fertilize on most pastures in the South never will have top pastures and many of them, unless they have unlimited land for the cows they own, never will make much profit from unfertilized pastures," he declared.

"The Southeast has the biggest opportunity of any place in the world to fertilize pastures and make money on the investment. As more land is being put into pastures, it is necessary to study pastures and treat them like any other crop regarding fertilizer."

"The fertilizer recommended for our permanent pasture areas is not too high, but the return from that investment is as large as it is on any crop we fertilize. We are going to have to be positive and accurate with our pasture fertilization just like we do crops."

Liming is the foundation of the fertilization program on pastures, the agronomist pointed out.

"If you do not need lime, you are lucky. You are just that much ahead. But if you need lime, you are making a mistake by not using it. When you use lime, then you can afford to use phosphate, potash and nitrogen in the amount that the plants can use and make a profit."

Fertilize pastures every year to build a fertility level for grass to grow when moisture and weather will permit, he advised. This will result in a better combination of grass and legumes.

"You cannot fertilize pastures one year and then skip a year or two and get results like you want."

New Plant Foods

PLAINVIEW, TEXAS—Two plant foods heretofore untried in West Texas are now being used in field tests by the Paymaster Farms. Soluble magnesium and potash are being tried, along with nitrogen and phosphorus, according to Don Lawson, an official of the Western Cotton Oil Co. which is conducting numerous tests on their Paymaster Farms.

MAGGOT REAPPEARS

PICKENS, S. C.—Pepper maggot, the insect which damaged the pepper crop in this county last year for the first time, has reappeared.

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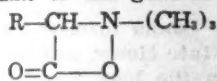
Industry Patents and Trademarks

2,797,985

Method of Producing Synthetic Soil. Patent issued July 2, 1957, to John D. Larson, Hinsdale, Ill. The method of producing a synthetic soil which comprises comingling a quantity of inorganic material consisting of approximately granite 2 parts, limestone 2 parts, clay 2 parts, and gypsum 1 part with approximately two and one-half times its weight of organic material consisting of peat 4 parts, horse manure 4 parts, and sewage sludge 7 parts, inducing fermentation in the mass by adding thereto a catalyst such as potato yeast culture and hippuric acid, promoting the oxidation of the cellulose components by aerating the mass and rotating the mass until the constituents are thoroughly decomposed and ended into a homogeneous flocculent product embodying in a condition immediately available for assimilation by growing plants those ingredients requisite for the production and sustaining of plant life.

2,797,986

Process for Producing Improved Superphosphates. Patent issued July 2, 1957, to Fred P. Zirm, Jr., Wilmington, Del., assignor to E. I. duPont de Nemours & Co., Wilmington. In the process of making superphosphates by reacting sulfuric acid and phosphate rock, the improvement which comprises incorporating into said sulfuric acid, from about 0.0035% to 0.05% by weight of the acid, at least the betaine of the general formula



wherein R is an alkyl radical of 10 to 16 carbon atoms.

2,798,022

Fungicide Containing Butadiene-Styrene Copolymer. Patent issued July 2, 1957, to Howard L. Yowell and Anthony H. Gleason, Westfield, N.J., assignors to Esso Research and Engineering Co. A persistent fungicide comprising an aqueous emulsion of powdered N-trichloromethyltetrahydrophthalimide as an ac-

tive fungicide, a minor amount of a water-soluble emulsifier and an oily liquid copolymer of 75-85 parts by weight of butadiene and 25-15 parts by weight of styrene having a viscosity of 8.5 to 20 poises at 50% N. V. M.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Ho Mar, in hand-drawn letters, for insecticides, herbicides and fungicides. Filed Oct. 12, 1956, by Homar Agricultural Chemicals, Wichita, Kan. First use on or about Mar. 1, 1955.

Organe-100, in capital letters, for fertilizer. Filed Nov. 5, 1956, by Great

Neck Gerden Center, Great Neck, N.Y. First use Sept. 17, 1956.

Terra-Lawn, in capital letters, for vermiculite soil conditioner and fertilizer. Filed Nov. 8, 1956, by Zonolite Company, Chicago, Ill. First use in August, 1956.

86% Favor Wheat Marketing Quotas

WASHINGTON — Final results of the June 20 referendum in the 36-state commercial wheat-producing area show that 86.2% of the 235,039 farmers voting favored marketing quotas for the 1958 wheat crop, the U.S. Department of Agriculture has reported. The vote was 202,668 for (86.2%) and 32,371 against (13.8%).

Because wheat marketing quotas proclaimed under law by Ezra Taft Benson, Secretary of Agriculture, last April 19 are effective on approval by two thirds or more of farmers voting in a referendum, marketing quotas will be in effect for the 1958 wheat crop.

California Bureau Plans Insect Survey

SACRAMENTO — The California Bureau of Entomology is laying plans for a statewide survey this summer of several potentially disastrous insects including the Mediterranean, Oriental and Mexican fruit flies and the melon fly.

"It is a precautionary measure made possible by development of synthetic baits which can be combined to lure several species of insects to one trap," a bureau spokesman said.

Formerly separate traps were required for each insect. Traps with the new bait probably will be placed throughout the state except for the high mountainous country.

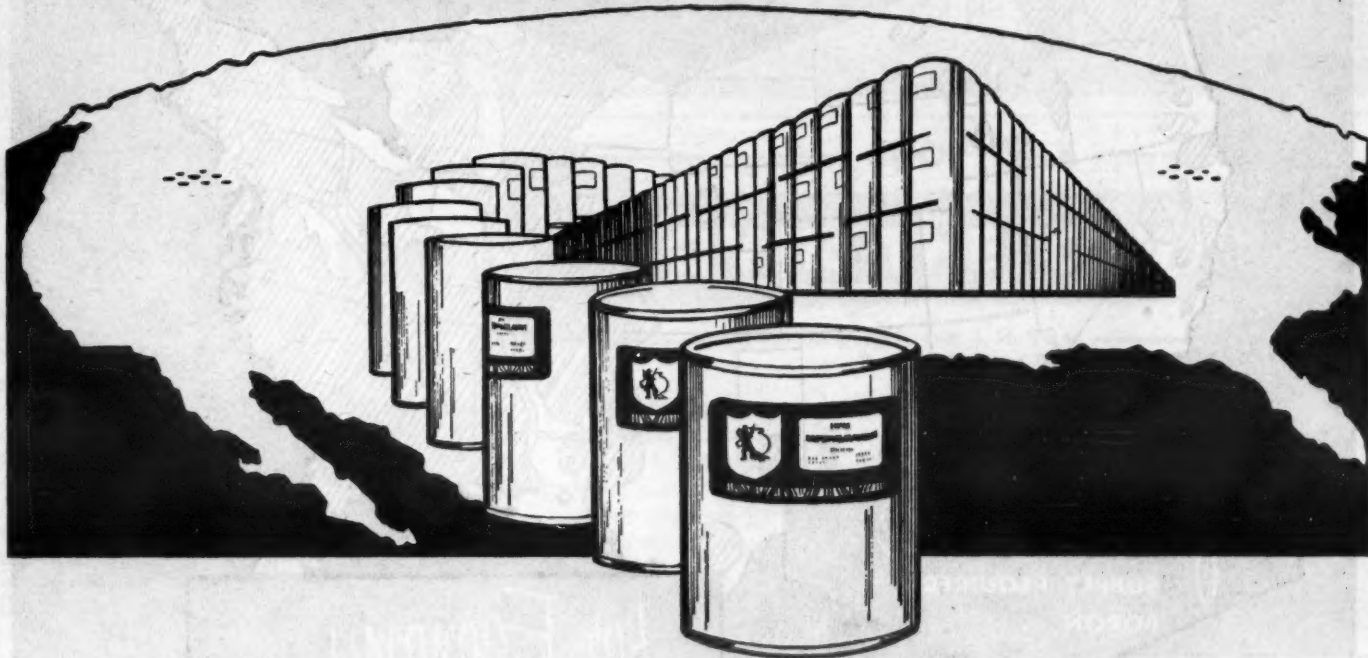
AERIAL SPRAYER KILLED

BIG PINEY, WYO.—William Misczuk, 35, Blackfoot, Idaho, was killed recently when the light plane, with which he was spraying sage brush, crashed near here.

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Heavy Fertilization Necessary for Best Coastal Bermuda Grass

ANDERSON, S.C.—Well fertilized coastal Bermuda grass has put a different look on beef production in southeastern states, according to L. Starkey, former head of the animal husbandry department at Clemson College.

"Grazing tests in South Carolina and Georgia have shown that Coastal Bermuda will produce more beef per acre than will common Bermuda and other grasses tested," he said in an article in the Anderson "Independent."

"It is estimated by livestock and agronomy specialists that one acre of Coastal Bermuda well fertilized will furnish grazing for a cow and calf from early spring until late fall.

"Moreover, from this same acre enough hay may be harvested to carry the cow through the winter. This is quite a step forward, for we have in the past estimated that it required an average of three acres of permanent pasture to carry a cow through the summer grazing period. "Coastal Bermuda . . . is a perennial so all we have to do is apply fertilizer and cut hay . . . Coastal Bermuda responds to heavy applications of fertilizer but will not thrive under poor management. . . . By proper fertilization of Coastal Bermuda in the state's idle acres we should be able to produce four times as much beef as we are now producing," he said.

CIPPERLY

(Continued from page 1)

pasture on such land in Missouri, but is cited as an example to point up the case for improved pasture on at least parts of some farms.

Fertilized pasture land is a longer life crop than land which is permitted to grow without proper attention and management. Fertilized pasture is likely to be verdant earlier in the spring, stand up under the hot dry summers and show a prolonged life later in the year.

That is a dividend that cannot be measured in normal statistical material collected by the economist.

The choice of crops for pasture is also a guide for the use of plant foods. Alfalfa for example is a "carriage trade" pasture crop requiring maximum amounts of plant foods. Lespedeza and other clover and ladino crops can develop adequately on a lower level of plant food application,

but that does not mean that alfalfa with its higher fertilization diet is not also a dividend paying pasture crop.

Grassland farming, which is probably a more adequate description of the pasture-forage crop lands, appears to have been overlooked in our scheme of farm economy. It has been overlooked to the point where its possibilities have not been fully explored. It was pointed out in Beltsville that an outstanding example of grassland farming is to be found in New Zealand. That nation, in an area about the approximate size of New York, Pennsylvania and New Jersey, raises 40 million head of sheep a year, primarily from grazing on pasture.

Dealer development of pasture land farm customers for fertilization looks like a "bread-and-butter" type of business where earnings will help carry the overhead expenses of a business and provide the dividend paying opportunities which will come from the more dramatic sales potential of fertilizer sales for field crops.

NORTHEAST DROUTH

(Continued from page 1)

rain falls, according to packers and shippers.

Cranberry bogs have been ravished by the incessant heat. Many bogs have large areas in which the blossoms have shrivelled and died. Experts say that the cranberry crop will have a \$400,000 loss no matter what happens, but water shortage may cause heavy damage to bogs in addition to the loss of an important cash crop.

Carrots, cauliflower, spinach, hay, apples and many other Bay State produced table items have suffered severely from drouth. It was stated that supplying the local market could easily become a problem within a month unless truck garden supplies are ordered in time from distant points. Squash, tomatoes, potatoes and hay have been about a week to two weeks behind in development be-

cause of drouth, and truck farms lacking irrigation systems are reporting to county agricultural agents that there will be certain crop failure unless steady soaking rains fall.

In Middlesex county, the Concord valley truck farms, most of which are piped for irrigation were not so critical as the truck farms in southeastern Massachusetts, but farmers stated that the water supplies would have to be replenished if irrigation to continue.

Some truck farmers, unable to afford irrigation, said they would have to ask for the same kind of help that farmers in the Texas dustbowl were given during their drouth losses.

The deadening hand of the drouth has already reached into next year. Carlton Cartwright, Essex County farm agent, said. Rainfall now averages eight inches below normal for the county. "Fruit trees now are forming buds for next year," he said. "The dry weather should reduce the 1958 potential crops."

Mr. Piper estimated principal crop losses in Massachusetts as: Cranberries, \$400,000; hay and pasture, \$500,000; general truck crops, \$100,000; and blueberries, \$40,000. Massachusetts dairy men have been taking a financial drubbing that is as most as thorough, but less spectacular than that given cranberry growers, Louis A. Webster, state director of marketing, said. A dependable dairy loss figure is not yet available.

Rhode Island farmers, marching on the State House, explained their plight in the long drouth to Gov. Dennis J. Roberts and urged that he hire a rain maker at once, after the issue of hiring the professional rain maker in an effort to end the long drouth flared into a controversy.

The controversy was between those who desperately want rain, however induced, and those who for personal reasons prefer that the rain stay away. Scores of messages poured in to the governor's office urging him not to hire the rain maker. Typical was a message from Louis L. Lord, president of the Newport Jazz Festival, asking that no artificial rain making be approved until after the end of the festival. The governor and his administration find themselves caught between the conflicting appeals.

Meanwhile the drouth continues. Many parts of Rhode Island have had no appreciable rain since early April. Agricultural losses already are estimated in the millions of dollars. Prof. Homer O. Stuart, director of agricultural extension at the University of Rhode Island, estimates that direct losses may reach \$20,000,000 and that the entire economy of the state will feel the effects.

Indications are from statistical evidence compiled by Dr. A. Boyd Pack, climatologist with the United States Weather Bureau, that this year could be the driest of the century in Rhode Island. Only an abundance of rainfall in the final six months of the year could deprive 1957 of that dubious distinction. For Rhode Island as a whole, less than half an inch of rain fell in June, Dr. Pack reported. The normal rainfall for June is 3.17 inches. Even the average is misleading. Some northern sections of the state have received more than the half-inch state average, but the Kingston farming area has received less than .15 an inch.

ENGINEER NAMED

KNOXVILLE—Appointment of Clarence W. Bockhop as head of the agricultural engineering department of the University of Tennessee College of Agriculture has been announced by Dr. Webster Pendergraft, dean of agriculture.

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SPECIAL EMPHASIS ISSUE . . .

Off-Season Fertilization and Maintenance of PASTURE and RANGE LAND



(Photo Courtesy U.S. Department of Agriculture)

SELL MORE FERTILIZER WITH

Farm Service and Demonstrations

By Dr. U. S. Jones, Chief Agronomist, Olin Mathieson Chemical Corp.

In recent months much has been written and said about how farm service and demonstrations will be the high road to success for the dealer and manufacturer of farm chemicals. "I try to figure how the grower can make the most cotton per acre," says Hendrix Tyler, Olin Mathieson Chemical Corp. salesman in central Arkansas. "Because if you show me a successful farmer in my area, I'll show you one that uses all the fertilizer, poison, defoliant, irrigation equipment, and other good practices that the principles of good business and scientific agriculture dictate. The farmer making the most cotton per acre is making the most money."

Says Ben Rogers, the 800-acre farmer in this story: "There's no such thing as a cheap crop. I know because I've tried to make 'em. It takes about a bale of cotton to the acre to pay expenses. All over that is profit and all under that is below the break-even point."

In the spring of 1955 Mr. Rogers was in the hospital when Hendrix Tyler went by to work out a crop production program. Soil samples were supposed to have gone to the University of Arkansas for testing, but in the confusion of Mr. Rogers' illness, they hadn't been sent. Mr. Hendrix improvised by using the Purdue soil test kit that he had learned to use with the company agronomist. The soils were tested, past field history checked, the anticipated yield and management level determined. In 1955, Mr. Rogers had made 1½ bales per acre and this was the highest yield he had made since owning the farm. But most everybody made a high yield in 1955. Based on the soil

tests, kinds and amounts of fertilizer were suggested.

When Mr. Rogers got out of the hospital, he followed the fertilizer program suggested by Mr. Tyler although the suggested fertilizer program cost twice as much as the previous year—\$20.83 per acre compared to \$9.85. But irrigation water was available and Mr. Rogers said he would use a complete insect control program in accordance with the need as determined by the investigation that Leo Wylie, the county agent of Jefferson County, was going to make to check the insects on his farm and on his neighbors' farm.

Mr. Rogers used 400 lb. of 13-13-13, poisoned 15 times, plowed as deep as a John Deere A tractor would plow, irrigated twice and used a good variety. All of this—sprinkled with hard work—made 2½ bales per acre on all his cotton land in 1956—an average cotton year.

One and one-half bales in a good cotton year—2½ bales in an average cotton year. This sounds like "good news," thought Mr. Tyler, so he asked for help from the sales manager. Clay Hansen, the area sales supervisor, was asked to organize and arrange publicity for a field day on Mr. Rogers' farm. Two hundred farmers, dealers, agricultural workers, and students showed up. Field tours were arranged. Soybean, rice, and fish pond culture, as well as cotton, were discussed by the Soil Conservation service, FHA, Vo-Ag, and extension workers of Jefferson County who were posted at the five stops on the tour.

(Continued on page 16)

SHOP TALK



OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Fertilizer dealers and all others concerned with selling fertilizer have a special invitation from Croplife.

It's not a formal invitation, the kind that includes an R.S.V.P. The invitation is merely to set aside a few minutes right now to read over the special section in this issue devoted to fall fertilization. The few minutes of time spent in reading the section can mean more money in the dealer's pocket next winter and in the years to come.

Agronomists agree that some crops and some areas are agronomically and economically suited for off-season applications of fertilizer to pastures. The editorial material in this section is presented with this fact in mind.

A program designed to increase fall application of fertilizer will result in a better spacing of fertilizer sales and, over-all, more plant food sold. More sales mean more profits and what dealer isn't profit-minded?

The invitation suggests that the dealer and salesman be on the lookout for ideas in this section which will help him sell farmers and ranchers on fall fertilization—if the practice is recommended for the area.

An idea or two may be found in the case history of one Arkansas cotton farmer who believes there is no such thing as a cheap crop. That article begins on this page. There are sure to be other helpful hints, suggestions and recommendations in the material on the following pages.

Authorities on fertilizer applications on pastures and range land have been consulted in the preparation of the material. A dealer, by checking this material, can point out to a prospect, "Look, Joe, here's what Prof. So-and-So of the university recommends for your pasture. Why don't you try his recommendation and

prove it to yourself that fall fertilization pays off?" Dealer aids provided by manufacturers are also listed.

There is a growing interest in off season fertilization and more and more data is becoming available. For this reason, and because agronomic conditions vary in different sections of the U.S., editorial material has been divided into four categories and is "tailored" to apply to four regions. This issue is of special interest to the South. Subsequent issues will contain material especially selected for the Midwest, West and Northeast sections.

Readers are invited to save those that have special application in their area and put them to work in helping sell more fertilizer this fall and every fall.

TOBACCO FOOTHOLD

McCORMICK, S.C.—Production of aromatic tobacco in McCormick County in western South Carolina has gained a foothold. Some 13 producers expect to make over \$30,000 on the county's first successful crop. Another effort several years ago failed because of inadequate curing facilities.

Pasture Maintenance Recommendations

Best Methods Given for Fertilizing Pastures in Southern States Region

Only with adequate fertilization of pastures, range lands and grassland plots is it possible to realize the full potential of such areas. The agricultural experiment stations of the various states have made recommendations for the fertilization of these lands based on long experience and study with different crops on the types of soils to be found in the states.

Below are some of the recommendations made by states in the southern marketing area, covering not only the fertilizer needs for optimum economic returns, but in some cases suggestions for the control of agricultural pests which must be kept in check if best results are to be realized.

Recommendations of states in other regions of the U.S. will be presented in the three subsequent editions of Croplife. They will include the Middlewestern states July 22; the Western states July 29; and the Northeastern states Aug. 5.

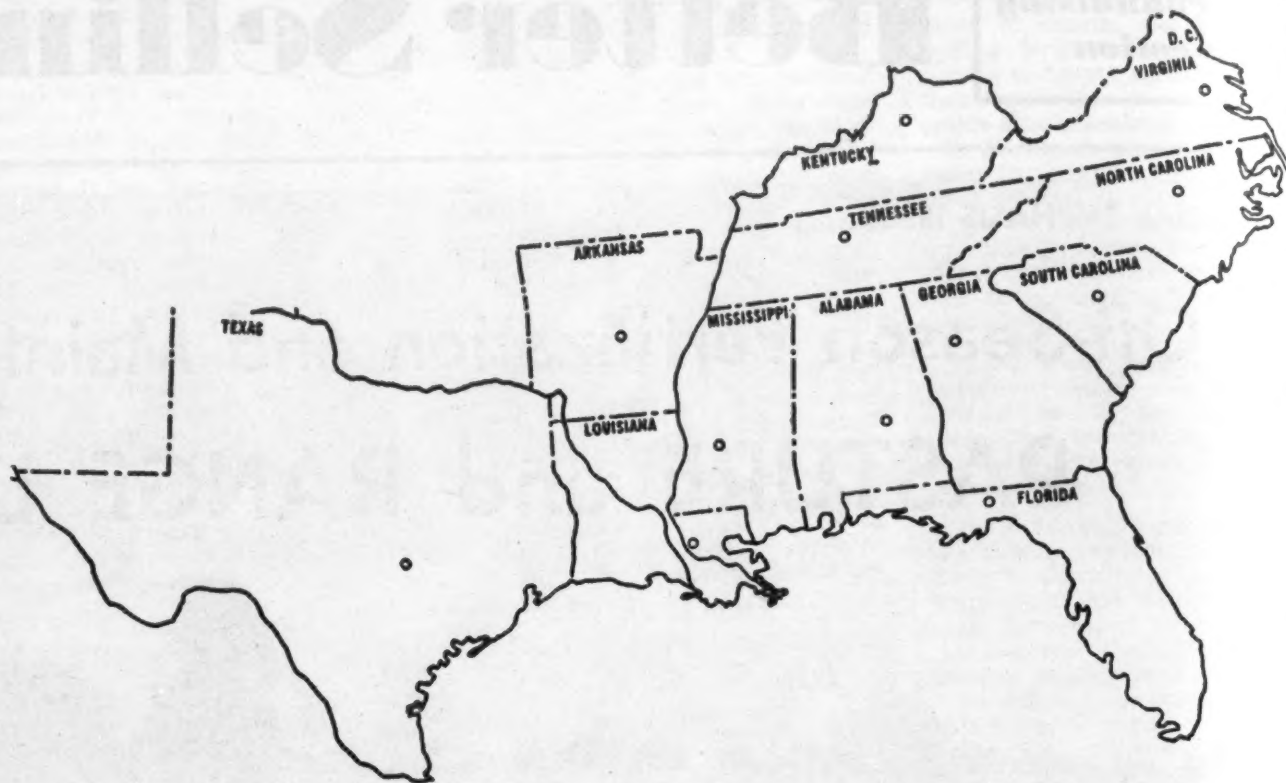
TEXAS

M. K. Thornton, extension agricultural chemist at Texas A&M College, has suggested the following methods of applying fertilizer for efficient use on field crops:

For establishment, he says to drill the fertilizer into the soil at a depth of 3 or 4 inches, with a grain drill attachment at the time of seeding the

alfalfa. The fertilizer should be applied half way between the drill rows. The most effective fertilizer application is made at the time of seeding.

For maintenance, when alfalfa stands are maintained for several years, phosphate and potash should be applied in the early fall, late winter, or early spring as a top dressing, or by drilling, to replace that lost by cropping. If applied as a top dressing, a renovator should be run over the



Upper Rio Grande, and Trans Pecos

Irrigated Areas

POUNDS OF NUTRIENTS TO BE APPLIED PER ACRE AT OR BEFORE PLANTING

	Clays and clay loams	Loams and sandy loams	Sands and loamy sands	Remarks
FIELD CROPS				
Alfalfa	20-40-0	20-60-0	20-60-0	Topdress with 30-0-0 each cutting; 0-60-0 annually in spring for maintenance
Pastures				Topdress with 60-0-0 each time cut or grazed down
Grasses only, grasses and legumes including small grains	40-40-0	40-40-0	60-60-0	

Rio Grande Plain

Dry Land Areas

	Calcareous alluvial soils	Clays and clay loams	Uplands Loams and sandy loams	Sands and loamy sands	Remarks
Pastures					Topdress with 20-0-0 after each cutting or grazing down if soil moisture is adequate
Grasses and legumes including small grains	30-0-0	30-30-0	30-30-0	30-30-0	

Irrigated Areas

Pastures					Topdress with 60-0-0 each time cut or grazed down
Grasses only, grasses and legumes, including small grain	40-40-0	40-40-0	40-40-0	40-80-0	

Lower Rio Grande Valley

Irrigated

	Clays and clay loams	Loams and sandy loams	Sands and loamy sands	Remarks
Sudan, Johnsongrass, Oats, barley	40-0-0	60-60-0	60-80-0	Sidedress with 60-0-0 each time cut or grazed down
Annual legumes	20-80-0	20-80-0	20-80-0	
Pastures (Permanent)	40-80-0	60-80-0	40-80-0	Topdress with 60-0-0 each time cut or grazed down

Dry Land

Pastures (Permanent)	40-80-0	40-80-0	40-80-0	Topdress with 30-0-0 each time cut or grazed down if soil moisture is adequate
Pastures				Topdress with 30-0-0 each time cut or grazed down if soil moisture is adequate
Oats and Sudan	60-60-0	60-60-0	60-60-0	

High Plains

(Irrigated Land)

FIELD CROPS	20-60-0	20-60-0	30-60-30	Remarks
Alfalfa & biennial sweetclovers				For maintenance 0-60-0 annually
Pastures (cultivated)				Topdress with 30-0-0 each time grazed down or cut
Grasses only	20-0-0	20-60-0	30-60-30	
Grasses and legumes				
Sorghum for hay	30-0-0	30-30-0	30-60-30	Sidedress with 30-0-0 after each cutting
Sudan				
Annual legumes	0-30-0	0-40-0	15-60-30	

Rolling Plains*

	Calcareous alluvial clays and clay loams	Calcareous alluvial loams and sandy loams	Clays and clay loams	Uplands Loams and sandy loams	Sands and loamy sands	Remarks
FIELD CROPS:						
Alfalfa & biennial sweetclovers	20-60-0	20-60-0	20-60-0	0-60-0	15-60-60	0-60-30 annually to maintain
Pastures (cultivated)						Topdress with 20-0-0 each time grazed or cut if soil moisture is adequate
Grasses only including small grains	30-0-0	30-30-0	30-0-0	20-40-0	20-40-20	
Pastures (temporary)						
Grasses and legumes including small grains	0-0-0	15-30-0	0-0-0	15-60-0	15-60-30	

*With irrigation, add 50% to the recommendations.

West Cross Timbers and Central Basin

FIELD CROPS	10-40-0	10-40-0	10-40-0	10-40-0	15-60-60	Remarks
Alfalfa						0-60-30 annually on sands and loamy sands and 0-60-0 on other soils for maintenance
Pastures						Topdress with 30-0-0 each cutting or each time grazed down if soil moisture is adequate
Grasses only, and small 30-0-0 grains with legumes		20-20-0	20-20-0	20-40-0	20-40-20	
Pastures						Apply lime according to soil test
Grasses and legumes	20-20-0	20-20-0	20-20-0	20-60-0	20-60-20	

Gulf Coast Prairie

	Calcareous alluvial clays and clay loams	Calcareous alluvial loams and sandy loams	Non-calcareous alluvial loams and sandy loams	Black-clay and clay loams	Black loams and sandy loams	Gray sands and loamy sands	Remarks
FIELD CROPS							
Alfalfa	0-40-0	15-60-0	20-80-80	15-60-0*	NR	NR	Apply 0-60-0 annually for maintenance. Apply lime according to soil test
Pastures							Apply lime according to soil test
Grasses and Legumes	30-60-0	30-60-0	30-60-30	30-60-0	30-60-30	30-60-60	
Pastures (Improved)							Topdress with 30-0-0 each time grazed or cut when soil moisture is adequate. Lime according to soil test
Grasses, including small grains	30-30-0	30-30-0	30-60-30	30-60-0	30-60-30	30-60-60	

East Texas Timber Country*

	Calcareous alluvial clays and clay loams	Calcareous alluvial loams and sandy loams	Non-calcareous alluvial sands and loamy sands	Uplands* 1—Loams and sandy loams (mixed land) central & western part of area	2—Loams and sandy loams (mixed land) Eastern edge of area	Remarks
FIELD CROPS						
Alfalfa	15-60-0	15-60-0	40-80-40	40-80-80	40-80-80	Topdress with 30 lb. nitrogen and 30 lb. potash each cutting. Repeat annually for maintenance. On acid soils, lime according to soil test
Sericea	NR	NR	NR	NR	NR	
Pastures						Topdress with 30-0-0 each time grazed down when soil moisture is adequate
Grasses only, and with legumes	30-0-0	30-30-0	30-60-30	30-60-30	30-60-60	

*If irrigated, use 50% more than suggested above.

Blackland Prairie, Grand Prairie, and Eastern Part of Edwards Plateau

	Calcareous alluvial clays and clay loams	Calcareous alluvial loams and sandy loams	Clays and clay loams	Upland 1—Loams and sandy loams (mixed land) central & western part of area	2—Loams and sandy loams (mixed land) Eastern edge of area	Remarks
FIELD CROPS						
Alfalfa & biennial* sweetclovers	20-40-0	20-60-0	20-40-0	20-60-0	20-80-80	Apply 0-40-0 in fall annually to maintain. On acid soils, lime according to soil test
Pastures						Topdress with 30-0-0 each time grazed down if soil moisture is adequate. Apply lime according to soil test
Grasses only and Grasses and legumes	30-30-0	30-30-0	30-30-0	30-60-0	30-60-30	

PRODUCTION COSTS AND CALCULATED INCOME FROM THE APPLICATION OF NITROGEN FERTILIZER ON IRRIGATED COASTAL BERMUDA GRASS, 1955 AND 1956

Crystal City, Texas

Pounds of elemental nitrogen applied per acre annually	Tons of air-dry forage per acre	Fertilizer cost per acre	Total cost per acre ¹	Gross returns per acre ²	Net return per acre	Net return per dollar invested
0	2.88	\$ 7.80	\$ 39.80	\$ 86.40	\$ 46.60	\$1.17
120	6.70	24.90	56.90	201.00	144.10	2.53
240	9.80	42.00	74.00	294.00	220.00	2.97
360	10.70	59.10	91.10	321.00	229.90	2.52
480	11.96	76.20	108.20	358.80	250.60	2.32
600	13.03	93.30	125.30	390.90	265.60	2.12

¹ Includes fertilizer and the following production costs per acre: Irrigation (seven times), \$28, and top-dressing fertilizer (four times), \$4; total, \$32 per acre.
² Air-dry forage valued at \$30 per ton.

land until the fertilizer is incorporated in the root zone.

Fertilization of pastures should be drilled in with a grain drill or broadcast and plowed in. This is especially important with respect to fertilizers furnishing phosphate or potash. Nitrogen fertilizers then may be applied as needed as a top dressing.

For maintenance, the fertilizer may be applied with a grain drill in either the fall or spring. Pastures for winter grazing should be fertilized in late summer or early fall. Summer pasture should be fertilized in the early spring or late winter.

Broadcast applications of fertilizers to establish pastures have given good results in some areas. Nitrogen may be top dressed as needed. Annual applications of fertilizers are more profitable than heavy applications that are expected to last several years.

The Texas Agricultural Extension Service has given fertilizer recommendations for various areas of the state as tabulated in the tables on page 10 and above.

ALABAMA

Recommendations of the Alabama Polytechnic Institute Agricultural Experiment Station on Fall Pasture Fertilization

Soil tests are suggested initially and each three years thereafter to adjust the soil level of plant nutrients or to balance the ratio of nutrients applied to take advantage of known levels in the soil for maximum efficient production of forage.

General recommendations for lime and fertilizer are as follows:

1. Annual legume-grass mixtures for winter grazing. These include ryegrass-crimson clover, oats-crimson clover, and similar mixtures. The recommendation is 40 to 50 lb. each of N, P₂O₅, and K₂O an acre.
2. Permanent grass-legume pastures. The fertilization recommendations for establishment of so-called permanent type pasture mixtures are 130 to 160 lb. P₂O₅ and 60 to 80 lb. K₂O an acre. For maintenance of these pastures an annual application of 65 to 80 lb. P₂O₅ and 30 to 40 lb. K₂O an acre is recommended. For soils known to be low in potash, a higher level of potash application is suggested.

The general lime recommendation for both types of pasture is as follows: One ton an acre of ground agricultural limestone on sandy soils and two tons an acre for heavier-textured soils. All lime applications should be made well in advance of seeding. The above pasture fertilizer recommendations presuppose a forage program relying on a vigorous growth of legumes for nitrogen except in the case of early winter grazing on grass-legume mixtures.

Permanent type pastures in Alabama are principally white clover-Dallis grass mixtures, reseeding crimson clover-Bermuda grass or Pensacola Bahia grass, and white clover-perennial cool-season grasses, such as orchard grass or tall fescue.

Weed Control in Alabama Pasture Lands

Here are recommendations for chemical control of Cherokee Rose, Alder, and other pasture weeds for Alabama:

The most practical and economical method of controlling a heavy infestation of Cherokee Rose is first to remove the top growth of roses with a rotary type mower and then when the

new growth of roses reaches a length of 12 to 18 inches apply two pounds (acid equivalent) of an amine of 2,4-D an acre or 1 lb. of a low volatile ester. This chemical treatment should be repeated as often as the new growth of roses reaches the above length.

Large clumps of Cherokee rose can be killed with 10 lb. concentrated Borascu per 100 sq. ft. of area or other materials containing an equivalent amount of boron oxide, or with CMU at the rate of 0.17 lb. per 100 square feet. These chemicals

must be evenly distributed over the entire area covered by the roses. The soil may stay sterile for one year or longer.

Bitterweed or yellow top, marsh elder or wax weed, dog fennel or summer cedar, dock, verbena, and white thoroughwort can be controlled by applications of 1 lb. (acid equivalent) 2,4-D amine an acre mixed with sufficient water to give good coverage. Apply this mixture as often as necessary for control.

Alder can be controlled during the dormant season by applying 2,4,5-T in diesel fuel to the bottom 18 to 24 inches of the stems until thoroughly wet. Mix 2,4,5-T with diesel fuel at the rate of 8 lb. (acid equivalent) per 100 gallons of fuel. Alder may be controlled also during the summer with a foliage spray of 2,4-D or 2,4,5-T, or mixtures of the two. Mix these materials with water at rate of 1½ lb. (acid equivalent) per 100 gallons of water. In applying, thoroughly wet each plant.—From Alabama Agricul-

CROPLIFE, July 15, 1957—11

tural Experiment Station of the Alabama Polytechnic Institute, Auburn, Ala.

GEORGIA

Pasture Fertilization Recommendations

Recommendations for establishment of permanent pastures in Georgia include soil preparation, liming, and fertilizing. According to the Georgia agricultural extension service, Athens, the land should be thoroughly prepared in such a way that the top soil will be left on the surface. A disc or a bush and bog harrow is a good implement for this job. All plant residue should be turned into the soil. Harrow the land into a good seed bed. Land to be seeded in the spring should be prepared during the fall and winter. Land to be seeded in the fall should be prepared during the late summer.

The amount of lime to be applied to any given soil should be determined by a soil test. General recommenda-

(Continued on page 14)



A companion high nitrogen fertilizer for your quality mixed goods.

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CHICAGO, ILL.—7 South Dearborn St.
DENVER, COLO.—1375 Kearney Ave.
DES MOINES, IOWA—6th Floor, Hubbell Bldg.

HOUSTON, TEXAS—1020 E. Holcombe Blvd.
INDIANAPOLIS, IND.—1112 N. Pennsylvania St.
KANSAS CITY, MO.—500 West 39th St.
MINNEAPOLIS, MINN.—212 Sixth St. South
NEW YORK, N. Y.—80 Broadway
OMAHA, NEB.—6th Floor, WOW Building
PASADENA, CALIF.—330 Security Bldg.

RALEIGH, N. C.—804 St. Mary's St.
SALT LAKE CITY, UTAH—68 South Main
SPOKANE, WASH.—521 East Sprague
ST. LOUIS, MO.—4251 Lindell Blvd.
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WICHITA, KANSAS—501 KFH Building

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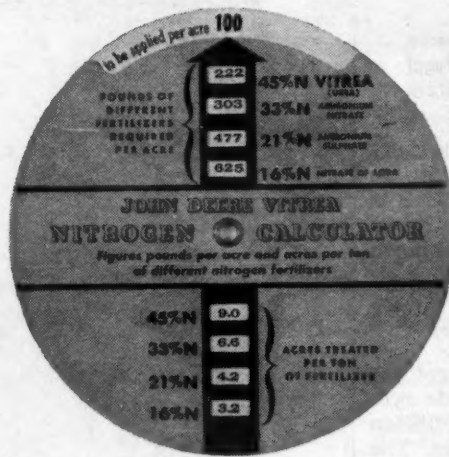
Phillips Chemical Company, a subsidiary, Bartlesville, Oklahoma

Fall Fertilization Sales Helps—



HERCULES POWDER CO.

6



FIRST OF SERIES

The sales helps featured here are the first of many scheduled to appear in a series of special emphasis issues of Croplife on the general subject of off-season fertilization and maintenance of pasture and range lands.

Subsequent offerings will appear in the issues of July 28 and Aug. 5.

Watch for them!

GRAND RIVER
CHEMICAL DIV.
JOHN DEERE & CO.
1, 2, 3

ASHCRAFT-WILKINSON CO.
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BOOST PASTURE PROFITS! Use AMMO-NITE—with more Nitrogen in the bag—for less! See chart below for savings.

Based on a use of 160 lbs. of actual Nitrogen per acre per year (four applications, two of mixed fertilizer, two of Ammonium Nitrate) in typical Florida grass pasture, here's a cost analysis of AMMO-NITE (33.5%) and 16% Nitrogen.

	For 160 lbs. actual N per acre	Cost	YOU SAVE per Acre Yearly
16% Nitrogen	1000 lbs.	\$30.00 (@ \$30/ton)	
AMMO-NITE 33.5% Nitrogen	480 lbs.	\$24.12 (@ \$50/ton)	\$5.88

*Prices used are for illustration only and are not intended as quotations.

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Order them from Your Supplier

Boost Autumn Sales With Dealer Aids Listed Below

Pictured on these two pages are just a few of the many sales helps available to dealers who sell various insecticides and fertilizers. For the sake of convenience, Croplife has provided a self-addressed return card on which items may be checked. Below are descriptions of the sales helps shown here, plus information on additional helps these firms are making available to their dealers.

Grand River Chemical Division, John Deere & Co., Tulsa, Oklahoma, offers the illustrated descriptive folders, each 4 x 9" folded. The leaflet on fall fertilization opens out to approximately 9 x 12", gives information on advantages of fertilizing in the fall, plus rates of application best suited for this purpose. The other folder describing the firm's urea product, opens out to 9 x 16". Check Numbers 1 and 2 on the coupon below.

The handy nitrogen calculator figures instantly, pounds per acre and acres per ton, of different types of nitrogen fertilizers. Complicated arithmetic is by-passed, so that a person may turn the disc to the number of pounds actual nitrogen to be applied per acre, and he is told how many pounds per acre that will be for 16% N; 21% N; 33% N; and 45% product. It also tells the number of acres that can be treated per ton of each type of nitrogen plant food. The disc is 3 7/8" in diameter. Check No. 3 on the coupon.

Ashcraft-Wilkinson Co., Atlanta, distributors for Escambia Chemical Corp., Pensacola, Fla., makes available to its dealers advertising mats and other advertising pieces. The 2-col. 10-inch mat, entitled "more profit" can be used in local newspapers and the "Ammonite" leaflet, approximately 5 x 7 in size, may be used as an envelope stuffer or in other ways. Check Nos. 4 and 5 on the coupon.

Hercules Powder Co., Wilmington, Del., makers of Toxaphene insecticides, has come up with an oversized plastic boll weevil which looks like the "real thing," attached to an acetate sheet 10 1/2 x 15". It is designed to be displayed in stores, where startled customers may give it a second look. Check No. 6 on the coupon.

Smith-Douglass Fertilizer Co., Norfolk, Va., offers its dealers a wall or bulletin-board placard 9 3/4 x 12 1/2" in size, outlining nine good reasons for applying fertilizer materials in the fall of the year. Printed in color. Check No. 7 on the coupon below.

Davison Chemical Co., Division of W. R. Grace & Co., Baltimore, has made available to its dealers a variety of newspaper advertising mats for local use. In addition to those shown here, the company also has headings "Make Your Crops Pay," and other "Davco" logos for use in developing layouts. Check No. 8 on the coupon below.

9 GOOD REASONS FOR FERTILIZING THIS FALL!

1. SAVES LABOR IN SPRING
2. NO STORAGE PROBLEMS.....
3. MORE TIME - AVOID THE SPRING RUSH
4. FAVORABLE WEATHER.....
5. LESS WINTER KILL - QUICK SPRING GROWTH
6. DECOMPOSITION IS FASTER.....
7. SOIL SAMPLES EASIER TO TAKE AND PROMPT RETURN OF RESULTS
8. MACHINERY PULLS EASIER - LESSENS DAMAGE TO SOIL.....
9. WIDE SELECTION OF GRADES, NO WAITING

FALL FERTILIZATION...

HELPS EVERY FARMER BETTER SPREAD HIS WORK LOAD, THROUGHOUT A FAVORABLE WEATHER SEASON.

REDUCE YOUR SPRING RUSH WITH

S-D PELLEFORM...NOW!



SMITH-DOUGLASS FERTILIZER CO.

7

DAVISON CHEMICAL CO.

8

Please send me the items checked:

John Deere Co.

- ☐ No. 1 Vitrea Bulletin
- ☐ No. 2 Fall Fertilization Bulletin
- ☐ No. 3 Handy Nitrogen Calculator

Ashcraft-Wilkinson Co.

(Escambia Chemical Corp.)

- ☐ No. 4 Advertising Mat for newspaper. Size: 2 col. x 10".
- ☐ No. 5 "Ammonite" Mailing folder. Size: 4 1/8 x 7 1/4".

Hercules Powder Co.

- ☐ No. 6 Giant size boll weevil for display. Over-all size of bug nearly 12".

Smith-Douglass Fertilizer Co.

- ☐ No. 7 Bulletin, "9 Good Reasons for Fertilizing This Fall." Size: 9 3/4 x 12 1/2".

Davison Chemical Co., Div. of W. R. Grace & Co.

- ☐ No. 8 Newspaper mats in single, double, and three column size. Also "Davco" brand spots for placing in ads.

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Minneapolis 1, Minn.

PASTURE RECOMMENDATIONS

(Continued from page 11)

tions are 3,000 to 4,000 lb. limestone an acre in the mountains, 2,000 to 3,000 lb. an acre in the Piedmont, and 1,000 to 2,000 lb. an acre in the Coastal plain regions. In all areas, lowland soils generally require more lime than up-land.

Fertilization should always be done on the basis of soil tests. The phosphorus and potassium levels should be medium to high. These elements, plus calcium, are the backbone of the soil. Nitrogen, however, is the production element. It increases yield and builds protein. Nitrogen gives plant a healthy dark green cover.

General recommendations for Georgia pastures are as follows: 1,000 lb. 4-12-12 an acre for establishment of permanent pastures on unimproved soils. If the soil is low in phosphorus, additional phosphorus should be added. At seeding time, use 400 to 600 lb. 4-12-12 an acre.

The following recommendations are given to keep pastures in a highly productive state and to postpone renovation.

1. The pasture should be protected from erosion until it becomes well established. Drainage ditches on the lowland should be kept open so that excess water will be removed.

2. Control weeds by fertilization, grazing, or mowing, or use of herbicides. Newly established pasture usually does best if grazed closely enough to keep down native weeds and grasses.

Control dock, thistle and other noxious weeds by spot-spraying with 2,4-D. If the pasture consists only of a grass such as Coastal Bermuda, the entire area may be treated with 2,4-D to control weeds. One-half to one and one-half pounds of 2,4-D acid equivalent amine should be used in 15 to 100 gal. water an acre.

NORTH GEORGIA

Crop	At Planting		Annual Side or Top Dressing		Annual Maintenance	
	Grade	Lbs./Acre	Grade	Lbs./Acre	Grade	Lbs./Acre
PASTURES						
Small grain	4-12-12	300-500	Nitrogen	80-100		
Grass alone	4-12-12	300-500	Nitrogen	60-100	4-12-12	400-600
Legume-grass	4-12-12	400-600	Nitrogen	30-50	4-12-12	400-600
Legume alone	4-12-12	400-600			0-12-12	400-600
Crimson Clover on Bermuda sod	4-12-12	400-600	Nitrogen	30-60	0-12-12	400-600
Coastal Bermuda alone	4-12-12	400-600	Nitrogen	80-150	4-12-12	400-600
Temporary pasture	4-12-12	400-600	Nitrogen	60-100		

SOUTH GEORGIA

PASTURES						
Small grain	4-12-12	300-500	Nitrogen	80-100		
Grass alone	4-12-12	400-500	Nitrogen	60-110	4-12-12	400-600
Coastal Bermuda alone	4-12-12	400-500	Nitrogen	100-200	0-10-20	400-600
Crimson Clover on Coastal Bermuda	4-12-12	400-500	Nitrogen	75-150	0-10-20	400-600
Legume-grass	4-12-12	400-600	Nitrogen	30-50	0-10-20	400-600
Temporary pasture	4-12-12	400-600	Nitrogen	60-100		

Proper fertilization is the best control for weeds. Good pasture plants such as Bermuda grass, Dallis grass, and clover, if properly fertilized, will usually crowd out most weeds.

Other points made in improving pasture management include a grazing system, utilization of excess growth for hay and grass silage, and keeping the fertility level high in the pasture in order to obtain top production. This prevents undesirable plants and weeds from taking over. Make annual applications of fertilizer. Meet lime needs of soil and crops at least each two to three years. Use tests when possible.

Winter annual pasture. The following points are made for best results with this type of pasture:

1. Select good land, considering drainage, fertility, and water supply for livestock.

2. Prepare land three to five weeks before planning the winter grazing crops. In North Georgia, this will be around the first of August and in South Georgia, late August or the first of September. Use lime when needed as determined by soil tests. Soil should be prepared in much the same way as described above.

Just before or at planting, apply broadcast or drill 400 to 600 lb. 4-12-12 fertilizer an acre. Distribute it uniformly. Mixtures, rates, and date of planting for various soil regions of Georgia are suggested in the table shown here.

For weed control in Georgia pastures (permanent), 2,4-D is recommended at the rate of .5 to 1.5 lb. chemical an acre in 15 to 40 gal. water an acre. Weeds killed by this material include bitter weed, thistles,

pepper grass, rag weed, plantains, morning glory, wild verbena, sun control and wild onions.

MISSISSIPPI

General Fertilizer Recommendations for Forage and Pasture Crops in the Hill Section of Mississippi

Three classifications of crops should be considered in these recommendations. They are: legumes, grasses, and grass-legume combinations.

Of the legumes, annuals should be fertilized with 60 lb. P_2O_5 and 30 lb. K_2O . These plants include crimson clover, lespedeza, wild winter peas, cowpeas, vetch. (Although sericea lespedeza and kudzu are perennials, they fall into the same category as the annuals with respect to fertilization.)

The fertilizer should be supplied by applying 300 lb. superphosphate and 50 lb. muriate of potash or the appropriate quantities of other fertilizer materials. It could be supplied in a mixed fertilizer by using 400 lb. 0-16-8; 200-300 lb. 0-24-12, and other 0-2-1 ratio mixtures.

(When crimson clover is being grown for seed production, add 5-15 lb. borax per acre.)

For fertilizing perennials—including white clover and red clover:

For establishment: 60 to 100 lb. P_2O_5 ; 30 to 60 lb. K_2O .

For maintenance: 60 lb. P_2O_5 ; 30 lb. K_2O .

The above recommendations could be met by using the appropriate quantities of materials such as superphosphate, and muriate of potash, or of any 0-2-1 mixed fertilizer.

For seed production, add 5-15 lb. borax an acre.

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2. It's preferred overwhelmingly by formulators—as indicated by the following estimates of the amounts of popular cotton insect control dusts (or their combinations) being made with Attaclay: DDT and BHC—65%; chlordane and Toxaphene—75%; aldrin, dieldrin, aramite, parathion and heptachlor—practically all.
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PASTURE FERTILIZATION PAYS—Herd of well-fed dairy cows on pasture of oats, crimson clover, lespedeza and Bermuda grass which has been lime and fertilized with phosphate. The scene is on the farm of E. H. Hull, Duluth, Georgia. Experiments and commercial records show that adequate fertilization of pasture and range lands gives a good return on every dollar invested (USDA photo)

level. For establishment, apply 200 lb. P₂O₅; 100 to 200 lb. K₂O and 5-15 lb. borax.
For maintenance, use 100 lb. P₂O₅; 100 lb. K₂O and 5-15 lb. borax.
For establishment and maintenance of grasses (Dallis grass, Bahia grass, Bermuda grass, fescue, Sudan, ryegrass, etc.) these amounts of fertilizer should be applied: 30-60 lb. N; 60 lb. P₂O₅; 30 lb. K₂O plus additional N as needed.
Small grains (wheat, oats, rye, barley) for forage, apply 60 lb. N; 60 to 120 lb. P₂O₅ and 0 to 30 lb. K₂O. Apply 60 lb. N in early spring.
For grain: 20 lb. N; 20 lb. P₂O₅ and 30 lb. K₂O. Apply 40 lb. N in early spring.

Plant nutrients listed above may be obtained from materials such as (N) ammonium nitrate, ammonium sulfate, nitrate of soda, urea, anhydrous ammonia, (P₂O₅) superphosphate, concentrated superphosphate, basic slag, (K₂O) muriate of potash, etc., or from mixed fertilizers with the proper ratio of these elements.

Recommendations for grass-legume combinations follow:

For perennials (Dallis grass, Bahia grass, Bermuda grass, Carpet grass, etc., in combination with various legumes.) Grasses are generally established in spring; most legumes (except lespedeza) in fall. These are essentially spring, summer and early fall permanent pastures.

For establishment, apply 60 to 100 lb. P₂O₅ and 30 to 60 lb. K₂O.

For maintenance, apply 60 lb. P₂O₅ and 30 lb. K₂O. Apply nitrogen as needed to the grasses during the summer (if moisture is available).

Fescue and orchardgrass in combination with various legumes. (Period of growth is from September to May.) For establishment, apply 0 to 60 lb. N; 60 to 100 lb. P₂O₅ and 30 to 60 lb. K₂O.

For maintenance, apply 0 to 60 lb. N; 60 lb. P₂O₅ and 30 lb. K₂O. Apply additional N if needed to maintain desired grass-legume balance.

Annuals, including ryegrass or small grains in combination with various legumes, should receive 0 to 60 lb. N; 60 to 100 lb. P₂O₅ and 30 to 60 lb. K₂O as appropriate materials or mixed goods.

Nitrogen is applied at planting time, in fairly large quantities, to winter growing grasses such as ryegrass and small grains primarily to give fall and winter grazing. If the crop is planted late and no fall and winter grazing is expected, reduce the rate of nitrogen applied in the fall. Split applications of N generally give larger total yields; single applications at planting time result in a larger proportion of the total forage being produced in the fall and winter period.

A large amount of readily available phosphorus is particularly important for small grains if fall and winter grazing is desired. If no fall or winter grazing is anticipated the phosphorus recommendation can be reduced drastically.

For optimum results in establishing pastures, apply fertilizer in a band directly below (but separated from) the seed.

On established pastures, broadcast fertilizer on top of the sod.

A general rule for time of application is: Apply fertilizer as near as possible to the time you expect the fertilizer to stimulate growth. For example, white clover should be fertilized in the fall, lespedeza in the spring.

Mississippi Weed Control

Studies conducted since 1950 indicate that the following recommendations are effective in control of broad leaved weeds in permanent pasture lands. Use ½ to 1 lb. amine 2,4-D an acre in 20 gal. water as a broadcast spray application. First treatment should be made in early summer followed by a treatment in mid-summer if needed.

Pasture grasses and legumes should be well established and the weeds

should have emerged but should be small when treatment is made. It is hazardous to treat seedling grasses or legumes.

Bermuda grass, Dallis grass, fescue, Johnson grass, white and ladino clover, lespedeza and black medic are not injured to any significant extent by the treatment. Plant growth may be retarded for a short period in these plants but they recover quickly.

Pasture species severely injured by the 2,4-D are crimson clover, red clover, burr clover, hop clover, vetch and wide winter peas.

Excellent control of most broad leaf weeds such as bitter weed, tar weed or sump weed, ragweed, boneset and sneeze weed can be expected.

The applicator must, of course, observe all precautions on the label of 2,4-D container and exercise care to prevent drift of spray to growing cotton and other susceptible crop or ornamental plants.

SOUTH CAROLINA

Fertilizer Recommendations for Pastures

From 500 to 800 lb. an acre of 4-12-12 at time of seeding or sprigging. From 800 to 1,200 lb. an acre of 4-12-12 for maintenance.

Top dressing: 60 to 100 lb. nitrogen an acre in split applications as needed. 100 to 200 lb. nitrogen an acre in split applications for coastal Bermuda pastures as needed.

For coastal Bermuda for hay, 500 to 800 lb. 4-12-12 at time of sprigging. 800 to 1,200 lb. 12-12-12 for maintenance.

Top dressing: 200 to 400 lb. nitrogen an acre in split applications as needed.

A general recommendation for South Carolina is that a minimum of 1,000 lb. an acre of 20% superphosphate (or equivalent) should be applied on all new ground soils before planting.

All soils should be limed as indicated by soil tests.

Weed Control

Chemical weed control in pastures in South Carolina is recommended as follows:

Permanent pastures, winter or summer. Recommended materials are 2,4-D amine or low volatile ester. Rate of application: Amine 1 pt. an acre. Ester, one-half to one pint an acre.

When to use: When temperatures are 70° F. or above, weeds should be young and fast growing. For annual weeds, bitter weed, butter-cup, and May weed, spray in early spring when weeds are in seeding or rosette stage. For hard-to-kill perennial weeds, curly dock, "Wild Onion,"

Fall Pasture Fertilization Schedule for South Carolina

CROP—	Date of Seeding	Fertilization at Seeding (Per Acre)	Topdressing (Per acre)
Alfalfa	Sept. 15-Oct. 15	1200 lb. superphosphate before seeding 800-1000 lb. 4-12-12 25 lb. Colemanite	1000 lb. 0-14-14 (Borated) After first cutting
Annual Grazing Mixtures	Sept. 1-Oct. 15	600-800 lb. 4-12-12	30-60 lb. N, Fall 30-60 lb. N, Spring
Barley	For grain: Oct. 1-Nov. 15 For grazing: Sept. 1-Oct. 15	For grain: 400-600 lb. 4-12-12 For grazing: 600-800 lb. 4-12-12	For grain: 30-60 lb. N, Spring For grazing: 30-60 lb. N, Fall 30-60 lb. N, Spring
Fescue and Ladino	Sept. 15-Nov. 1	600-800 lb. 4-12-12	30-60 lb. N, Fall 30-60 lb. N, Spring
Oats	Same as barley	Same as barley	Same as barley
Fescue	Sept. 1-Oct. 15	600-800 lb. 4-12-12	Same as barley
Rye	For grain: Nov. 1-Nov. 30 For grazing: Sept. 1-Oct. 15	Same as barley	Same as barley
Ryegrass and Crimson Clover	Sept. 1-Oct. 15	600-800 lb. 4-12-12	30-60 lb. N, Fall 30-60 lb. N, Spring
Wheat	For grain: Nov. 1-Nov. 30 For grazing: Oct. 1-Nov. 1	Same as barley	Same as barley

Clemson Agricultural College cooperating with U.S. Department of Agriculture. Extension Service, George B. Nutt, Director, Clemson, S.C.

ARKANSAS

Fertilizer Recommendations for Maintenance of Fall and Winter Pastures in Arkansas (Average Recommendations)

CROP—	Fall Application Pounds Per Acre			Additional Nitrogen Pounds Per Acre N
	N	P ₂ O ₅	K ₂ O	
Winter Oats and other small grain for grazing	25	50	25	30 Nov. 40 Spring (Feb.-March)
Rye grass Pure Stand	25	50	25	40-50 Spring
Rye Grass and Clover	25	50	50	40 Spring
Winter Permanent—				
Orchard Grass or Fescue, pure stand or Grass and Clover	25 30	50 60	25 60	40-50 Spring 30 Spring
Winter Legumes Ladino, white, crimson and other clovers in pure stand	0	60	60	

Tall Dogfennel, spray when the weeds are young and fast growing. Increase the dosage 50%.

ARKANSAS

Suggested chemicals for weed control in Arkansas pastures for wild onions and wild garlic, 2,4-D amine, at 1 lb. an acre are recommended for application in November.

Maleic Hydrazide at 6 lb. in 20 gal. water brings best results when applied in late fall (November) after practically all the buds have shoots above the ground. (This should not be used on pastures sown for winter grazing since it inhibits the growth of pasture.)

2,4,5-T or brush killer 2,4-D plus 2,4,5-T should be applied for control of dew berry, blackberry, and horsetail when first blossoms appear. Plants should be sprayed until stems and the leaves are wet.

The state experiment station reminds all persons using herbicides that 2,4-D and related compounds must be applied according to Arkansas State Plant Board regulations outlined in the state circular entitled "Safe Use of 2,4-D," available through county agents.

LOUISIANA

Fertilizer recommendations for Louisiana pastures have been prepared by the crops and soils department of Louisiana State University agricultural experiment station.

On fall or winter planted mixed pastures on the coastal plain, pleistocene terrace and coastal prairie soils at time of seeding, apply 20 to 40 lb. N, 60 to 100 lb. P₂O₅ and 60 to 100 lb. an acre of K₂O. Nutrition may be applied by the use of 500 to 800 lb. an

acre of 3-12-12, 4-12-8, or 5-10-10 grades. If extra grass growth is desired in the mixed pasture, one or more top dressings of nitrogen at the rates of 30 to 60 lb. an acre each should be applied.

For spring applications to established clover sods, use 400 lb. an acre of 0-14-14 or 0-16-8. Grass pastures on these upland soils should be fertilized at or before planting with 20 to 40 lb. N, 60 to 80 lb. P₂O₅ and 40 to 80 lb. an acre, K₂O. This plant food may be supplied with applications of 500 to 800 lb. an acre of 3-12-12, 5-10-10 or 4-12-8 grades or their higher multiples. In addition to the fertilizer applied before planting the grass should be top dressed from one to three times during the growing season with 30 to 60 lb. an acre of nitrogen at each top dressing.

To grass on the alluvial soils, the application of 30 to 60 lb. an acre of nitrogen in either liquid or solid carriers at or before planting or in March on old sods and later applications of 30 to 60 lb. nitrogen at each of two intervals during the growing season is giving excellent results.

Some soils in the alluvial areas are low in available phosphorus and potassium. Most of the soils in the upland areas are in need of lime. Soil samples from the areas to be put in pasture should be tested by the Louisiana agricultural experiment station soil testing laboratory, in order to obtain more specific information about the fertilizer and lime requirements for pastures on each farm.

VIRGINIA

Fertilizer Recommendations on Temporary and Permanent Pastures

According to recommendations issued by the Virginia Polytechnic Institute, Blacksburg, Va., fertilizer recommendations for temporary pastures are as follows: (Rye Grass, Crimson Clover, or Small Grain Mixtures)

Use 40 to 80 lb. N, 40 to 80 lb. P₂O₅, and 40 to 80 lb. K₂O (400 to 800 lb. 10-10-10 or equivalent) an acre at seeding. Top-dress fall seeded pastures in February or early March with 30 to 50 lb. N if additional grazing is needed.

For permanent pastures (ladino clover—tall grass), apply at least 20 and up to 50 lb. N; 80 to 120 lb. P₂O₅, and 80 to 120 lb. K₂O (800 to 1,000 lb. 2-12-12, 4-12-12 or 5-10-10) an acre at seeding. Top dress annually with 0 to 40 lb. N, 50 to 100 lb. P₂O₅, and 50 to 100 lb. K₂O (400 to 800 lb. 0-14-14, 2-12-12 or 5-10-10) an acre. Use the higher rate if pasture is heavily grazed or if growth rate is slow.

To encourage clover, use the higher level of potash suggested above and graze closely. To encourage grass, let it grow tall in the spring and apply the higher rate of nitrogen suggested above.

If pasture is seeded on soil of high fertility or following a heavily fertilized crop, 8 to 10 lb. N, 50 to 60 lb. P₂O₅, and 50 to 60 lb. K₂O (400 to 500 lb. of 2-12-12 or equivalent) an

(Continued on page 17)

Advertisement

The Bulletin Board

No. 27 in a series from the Spencer Chemical Magazine, "Today's Fertilizer Dealer"



High quality feed is what they grow at Winwood Farms near Brundidge, Ala. Herdsman Larry Laird and Spencer Representative Ulay Wise (left) examine some well-fertilized Coastal Bermuda used by the farm to support a herd of 100 purebred Shorthorns.

How Fall Fertilization Pays Off On Southern Pastures:

Here in the South, more and more fertilizer is being applied in the Fall by farmers to get extra grazing from their pastureland.

One of the many Southern farmers who has proven just how valuable Fall fertilization can be is Robert L. "Bob" Godwin, owner of Winwood Farms near Brundidge, Alabama. And one look at his purebred Shorthorn herd will show you why Bob is so enthusiastic.

His cattle look grain fed, but Herdsman C. A. "Larry" Laird will be the first to tell you they aren't. The secret of that sleek, grain-fed look is 360 acres of well-fertilized Coastal and Swanee Bermuda, Bahia Grass and temporary grazing from oats and Crimson Clover interplanted with Coastal Bermuda.

Plenty of thought has gone into fertilization of the pasture for Winwood Farm's 100 brood cows. Lime, mixed goods and Nitrogen go on according to soil test. The mixed goods application is 500 pounds of 4-10-7, split into July and September applications.

In July, 100 pounds of ammonium nitrate is applied to step up growth of the Bermuda after Nitrogen released by the Clover is used up. Then, in September, another 100 pounds of ammonium nitrate is applied to give

adequate growth for late grazing and winter hay.

Experiment station tests show that nitrogen fertilization of Coastal Bermuda has a definite influence on protein content and, at Winwood Farms, they're convinced that the 87 pounds of actual nitrogen from the ammonium nitrate, plus N from the clover, helps to make a high quality feed.

Bob Godwin is sure of it, because he has cattle show and auction ring results for positive proof.

Of course, there are thousands of Southern farmers like Bob Godwin who are planning to apply fertilizer this Fall. And it's a sure thing that there are plenty more who can be sold on the idea of Fall fertilization.

So take full advantage of the growing trend toward Fall fertilization of pasture. Urge farmers in your area to get their soil tested soon, use mailings and other kinds of advertising to remind farmers how profitable Fall application on pasture can be, and make all the personal calls that you can. As one dealer says, "It's good to get some dust on your shoes!"

If you would like more information about merchandising of Fall fertilization, write Spencer Chemical Company, Dealer Service Department, Kansas City 5, Mo.



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DEMONSTRATIONS

(Continued from page 9)

A contest was held to see who could guess the yield of the first picking on a five-acre plot that had been defoliated and left just for people to see.

In the afternoon, Mr. Rogers told the group that he thought the main difference in his 1955 and 1956 yields and the reason for the increased bale per acre was the soil testing that Mr. Tyler had done, and the 400-lb. rate of 13-13-13 that was used. Both years the cotton was side dressed with ammonium nitrate. Both years irrigation water was available. Both years insects were controlled. Both years the fields were deep plowed.

Dr. R. L. Beacher, director of the University of Arkansas soil testing laboratory, speaking to the group, told how dovetailing all good production practices together created extra dividends over and above the individual increases to be expected from single treatments.

Dr. Ivan Miles, authority on soil testing and southern agronomist for Olin Mathieson, discussed practical applications of soil testing. "Roots don't have teeth," said Dr. Miles, "they have to drink their food."

"Plant nutrients have to be in a film of water around the soil particles for the crop to get nourishment. Not too much nitrogen and water and too big a stalk," he said, "but too little poisoning to make the top crop. If you want a crop like 2½ bales of cotton per acre, you've got to have a stalk to put it on. And you have to poison like Ben Rogers has done to set those bolls from the bottom right up to the top."

While the afternoon program was going on, the mechanical cotton picker harvested a representative acre and took it to the gin to be weighed. Result: 2,866 lb. of seed cotton or 2.2

bales of cotton from the first picking.

And, that top crop of speckled bolls that Dr. Miles talked about, was waiting for the second picking.

H. E. Maxwell, county agent, Loneoke County, won the prize—a ton of fertilizer. He guessed 2,850 lb. per acre.

Will this kind of an educational program coupled with farm service selling agricultural chemicals at a profit? Hendrix Tyler is one fertilizer man who believes it will.

Texas Publishes Alfalfa Bulletin

COLLEGE STATION, TEXAS—About 318,000 acres of alfalfa, having a value of 18 million dollars, were harvested for hay in Texas in 1955, making it the principal legume used for hay in Texas.

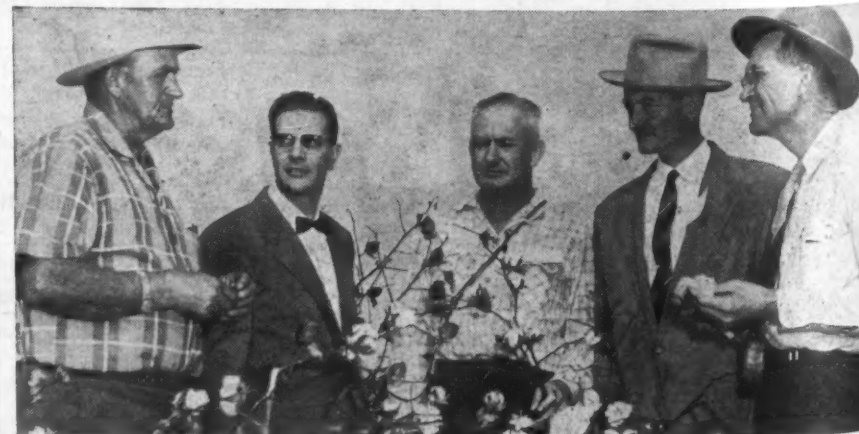
A publication just released by the Texas Agricultural Experiment Station, "Alfalfa Production in Texas," contains much information on the economic importance of alfalfa, the more important areas of production and the varieties grown. The publication also contains information on the regional adaptation of alfalfa, seed production, better utilization through pasture, silage, dehydration and soiling, plus helpful tips on production practices including soil, climate, land preparation, fertilization, inoculation, seeding and irrigation.

SUCCESSFUL CAMPAIGN

WALTERBORO, S.C.—"The Good-bye Mrs. Aunt" campaign to rid Colleton County of the pests was declared a great success by L. W. Alford, county agent. The campaign was promoted by newspaper articles, radio programs and one television show. Mr. Alford said local insecticide dealers stated they had an increased number of calls for chlordane and dieldrin as a result of the campaign.



FIELD DAY—Shown here is part of the crowd at the field day held on the Ben Rogers farm in Jefferson County, Arkansas, as it enjoys a noon lunch served by a women's church group. On the extreme left is Woody Miley, extension soils specialist of the University of Arkansas. The field day brought scores of farmers who wanted to learn how Mr. Rogers raises more than two bales of cotton per acre in an average cotton year.



COMPARING RESULTS—Hendrix Tyler, farm chemical salesman (second from right), discusses with Ben Rogers, fertilizer dealer (far left), the farm service program that resulted in 2½ bales per acre in 1956, compared to 1½ bales in 1955. Dr. Ivan Miles, southern agronomist for the Olin Mathieson Chemical Corp. (far right), checks the staple length. In the center, Leo Wylie, Jefferson County Agent, shows off the bolls on top of the stalk that good insect control assures. Second from left is Dr. R. L. Beacher, University of Arkansas, who was the guest speaker at a field day held on the Rogers farm.

RECOMMENDATIONS

(Continued from page 15)

may be sufficient at seeding. Annual top-dressing should be applied as recommended above.

In seeding a mixture of lespedeza-grass on soils of low fertility, use 30 lb. N, 80 to 130 lb. P_2O_5 , and 80 to 100 lb. K_2O (800 to 1,000 lb. 4-16-8 or 5-10-10) an acre. This rate may be decreased on soils with higher level of fertility.

Top-dress each year with 10 to 25 lb. N, 30 to 60 lb. P_2O_5 , and 30 to 60 lb. K_2O (300 to 500 lb. 5-10-10 or 2-12-12) an acre, or three times this amount every three to four years.

At seeding of blue grass and white clover, use 20 to 40 lb. N, 95 to 160 lb. P_2O_5 , and 65 to 80 lb. K_2O (800 to 1,000 lb. 4-16-8, 4-12-8, or 5-10-10) an acre. This rate may be decreased on soils of very high fertility or where heavy applications of manure have been used. Top-dress annually with 0 to 20 lb. N, 50 to 80 lb. P_2O_5 , and 25 to 40 lb. K_2O (300 to 500 lb. 0-16-8 or 4-16-8 or equivalent) an acre, or three times this amount every three or four years on fine textured soils.

In fertilizing established blue grass-white clover—if soil is of medium to high fertility level and there is at least 50% stand of grass and clover, apply 0 to 40 lb. N, 95 to 160 lb. P_2O_5 , and 50 to 80 lb. K_2O (600 to 1,000 lb. 4-16-8 or 4-12-8 or equivalent) as an initial application. On soils known to be very high in potash, an application of superphosphate may be sufficient. Top dress each year or every three or four years as recommended above under "Blue Grass and White Clover."

If soil is of very low fertility and the plants are largely broomsedge, poverty grass, and other undesirable plants, the soil should be limed, fertilized liberally, and reseeded as recommended above under "Blue Grass and White Clover." Top-dressing should be applied according to recommendations in the above section.

KENTUCKY

Fertilizer Recommendations under Kentucky Conditions

The first requisite is to have soil tests made for accurate appraisal of soil's needs. Since no suitable chemical test has yet been developed for nitrogen, the need for this element must be estimated on the basis of past history of liming, manuring, and cropping. Fertilizer nitrogen has nearly all of its effect on the immediate crop.

On established pastures, apply needed limestone as a top dressing. Top dress established pastures annually (unless the soil tests high or very high in phosphorus and medium, high, or very high in potassium) with 30 lb. P_2O_5 and 60 lb. K_2O an acre. (60 lb. P_2O_5 in alternate years may replace 30 lb. annually.)

Nitrogen should pay on pastures where the herbage is mainly grass and may pay on legume-grass pastures for earlier pasturage in the spring, for more even pasturage through the season, or if very high production is wanted.

Top dress alfalfa fields annually (unless the soil tests high or very high in phosphorus and potassium) with 60 lb. P_2O_5 and 120 lb. K_2O an acre. (120 lb. P_2O_5 in alternate years may replace 60 lb. annually.) Many fields also need boron. Apply 20-30 lb. borax an acre in alternate years or half as much annually.

Liming: When 2 or more tons of ground limestone are applied to the acre, the effectiveness increases for a year or two after application. Apply lime at half the recommended rate if rock phosphate is used, or when liming sandy loam soils. Increase rate of lime application by one-half on silty clay loam soils.

Rock phosphate: Phosphoric acid recommendations do not apply to rock phosphate. Consult county agent

for use of rock phosphate. Land treated with rock phosphate usually tests much higher in phosphorus than if treated with other fertilizers. Before making recommendations, the county agent should know if rock phosphate has been used.

Previous cropping, liming, and fertilization are important. Chemical soil tests are only one way of getting information on how to fertilize different soils and crops. Previous cropping, manuring, and fertilization also should be considered. Having this information greatly aids the county agent in making good recommendations.

Annual nitrogen applications of 30-100 lb. an acre will pay when the herbage is mainly grass, and may pay on legume-grass pastures for earlier pasturage in the spring, to obtain more even pasturage through the sea-

son, or when very high production is wanted. Apply 30-40 lb. the first of March for earlier spring pasturage and the same amount in June and September for increased summer and fall pasturage. When desired to apply N, P_2O_5 , and K_2O , a 1-1-1 ratio fertilizer could be used.—From College of Agriculture and Home Economics, University of Kentucky, Lexington.

Kentucky Fertilizer Conference Scheduled

LEXINGTON, KY.—The annual Kentucky Fertilizer Conference will be held Sept. 4, beginning at 10 a.m. at the Campbell House here, Bruce Poundstone, head of the department of feed and fertilizer, University of Kentucky, has announced. The program will include talks by experiment station personnel during the morning, a noon luncheon and a visit to the university's agronomy research plots in the afternoon.

California Scientist Named to UN Project

BERKELEY, CAL.—A University of California scientist has been named to help the World Health Organization find new compounds to combat disease-carrying insects. Dr. Robert L. Metcalf, chairman of the entomology department at Riverside, will spend a month this summer studying insecticide resistance problems in Southeastern Europe, the Near East and North Africa, where the United Nations Organization has been conducting a program of research and eradication.

Dr. Metcalf will fly to Geneva, subsequently going to Basel, Rome, Athens, Beirut, Tel Aviv, Jerusalem, Alexandria and Cairo. After a quick survey of specific problems, chiefly resistance of malarial mosquitoes, he will return to Geneva to make recommendations at a conference of WHO scientists.

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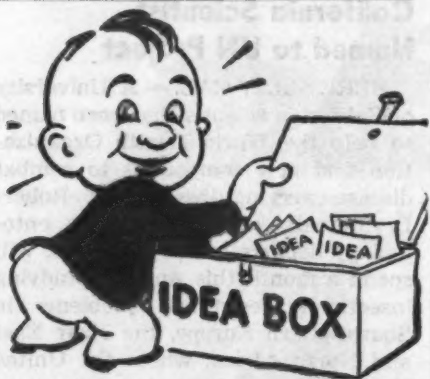
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You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6603—Technical Data Bulletin

Thiosemicarbazide, a reactive compound which behaves as a mono-acid base and is a strong reducing agent, is described in a new technical data bulletin issued by the industrial chemicals division of the Olin Mathieson Chemical Corp. The bulletin describes the product's application in insecticides, fungicides, antibacterial agents and stabilizers. The four-page bulletin gives information on physical and chemical properties, typical reactions, uses, literature references, and availability. Secure it by checking No. 6603 on the coupon and mailing it to Croplife.

No. 6604—Carrier for Liquid Toxicants

New literature has been prepared by the Minerals & Chemicals Corporation of America on its product, Attacloy, a carrier for liquid toxicants. Advantages claimed for the product are: Great sorptive capacity in high or low concentrations, with either viscous or "watery" poisons; produces dust bases, wettable powders that are dry, free-flowing, lump-free; and rapid, uniform impregnation. Secure the literature by checking No. 6604 on the coupon and mailing it to Croplife.

No. 6605—Fly Killer

African Pyrethrum Development, Inc., announces a fly killer for dairy barns that is "positive and economical but completely harmless to cows and to consumers of dairy products." The announcement was made following the establishment by official sources "that these qualities have been proven for formulations containing Pyrethrum (PYR), the natural flower-base insecticide, in combination with certain approved synergists, which extend and increase PYR's natural capabilities," according to officials of the organization. The synergized compounds are said to be equally effective in the form of sprays, fog, wettable powders or emulsions. A booklet is available without charge. Check No. 6605 on the coupon and mail it to Croplife.

No. 6606—Cotton Miticide

"Chipman 6199" is the product described in a technical service bulletin which has been issued by the Chipman Chemical Co., Inc. The product, formerly called "Tetram 75," and its recommendations for experimental use on cotton are outlined in the bulletin. The product is described as a fine granular, non-duty organic phosphorus compound which is readily

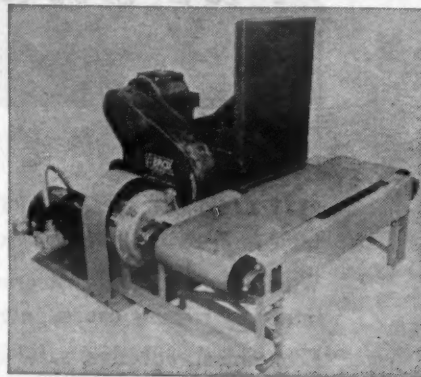
soluble in water for spray application. It is claimed to kill spider mites and suppress aphids. Secure the bulletin by checking No. 6606 on the coupon and mailing it to Croplife.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 5732—Jack Belt Conveyor

Non-stop production and automatic coordination of a vibrating bag packer with a sewing machine are claimed for a jack belt conveyor developed by the Richardson Scale Co. The new conveyor assures that any temporary interruption of the sewing process will not bring bag-packing to a standstill, it is claimed. The conveyor is located beneath an automatic scale with the sewing machine conveyor position in line with it. In operation, a bag resting on the conveyor is attached to the discharge spout of the scale. When the bag is filled, the operator steps on a foot pedal to start the vibrating action of the packer.



At the completion of the packing, the operator releases the pedal. The packer stops and the jack belt starts up. The bag travels to the sewing machine conveyor and on to the sewing machine station. The new conveyor has a center distance of 3½ ft. between the pulleys, permitting close placement of sewing machine to scale. Belt speed is 75 ft. per minute. For more information check No. 5732 on the coupon and mail it to this publication.

No. 5726—Portable Ribbon Mixers

The Young Machinery Co. announces that a new line of portable heavy duty horizontal ribbon mixers is in production with .34 cu. ft. to 20 cu. ft. working capacity. The mixers are available in carbon steel, stainless steel, and monel metal with or without heating or cooling jackets and move freely on heavy duty industrial casters. They are furnished with single or double ribbon or rib-

bon and paddle agitators. The mixers have dust-tight, gasketed, hinged cover with quick opening clamps, marine type compression packing glands and anti-friction outboard bearings with sealed roller bearing pillow blocks — one fixed and one floating. Discharge is made either from the center or the end by a slide gate or a worm gear operated plug gate. The portable mixers are furnished as complete units with motors and drives. They are recommended for mixing dry, free flowing powders or granular materials. Secure complete details by checking No. 5726 on the coupon and mailing it to this publication.

No. 5733—Sewing Head Attachment

A new sewing head attachment has been announced by the Union Bag-Camp Paper Corp. Called the I & C Acto-Cutter, this attachment automatically starts and stops the sewing head and also cuts the thread chain between bags, company officials said. They continued: "Field experience shows that the use of the Acto-Cutter reduces the human element in sewing to a point where an inexperienced operator may be used. The attachment also makes it possible for one operator to easily perform the combined operation of carefully forming the bag tops and then feeding the bags into the sewing head. Another advantage is that it reduces torn, unsightly and irregular sewn closures to a minimum." Designed for use on the Union Special 80600E sewing head, the unit is available in two basic models. Secure details by checking No. 5733 on the coupon and mailing it to this publication.

No. 6588—Sulfur Brochure

The Stauffer Chemical Co. has published a comprehensive 48-page brochure on sulfur. The brochure contains a description of production and refining techniques, statistics on the world's production of sulfur, and notes on the various uses of the material. It also includes specifications for the several types of conventional and insoluble sulfurs used in industry and agriculture, and tabulations of the physical and chemical properties of sulfur in its different forms. A copy of the brochure, "Stauffer Sulfur," is available free on request. Check No. 6588 on the coupon and mail it to Croplife.

No. 6593—Soil Fumigant

A new folder explaining how to use Crag Mylone is now available from Union Carbide Chemicals Co., Division of Union Carbide Corp. Mylone is a new, powdered soil fumigant that is said to need no plastic cover. It acts as a herbicide, soil fungicide, and nematocide in pre-planting treatments on a variety of ornamentals. It is now commercially available as a pre-planting treatment on ornamental propagating beds. Experimental use of the product is continuing in many different states on tobacco, vegetable, and forest-tree seed beds, and on turf. Formulated as an 85% wettable powder, Mylone can be applied dry with a fertilizer spreader or suspended in water as a drench or spray. Experimental dosages that gave most satisfactory results range from 100 to 300 lb. per acre, company officials said. Secure the folder by checking No. 6593 on the coupon and mailing it to Croplife.

No. 5676—Hand Truck

"The E-Z Loader," new motorized hand truck manufactured and distributed by the Walco Supply Co., "permits rapid loading, unloading and short range transport of bulky objects weighing up to 1,000 lb.," according to the manufacturer. The

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| <input type="checkbox"/> No. 5732—Conveyor | <input type="checkbox"/> No. 6598—Insect Control |
| <input type="checkbox"/> No. 5733—Attachment | <input type="checkbox"/> No. 6603—Data Bulletin |
| <input type="checkbox"/> No. 6588—Sulfur Brochure | <input type="checkbox"/> No. 6604—Carrier |
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John R. Thompson Joins V-C Bag Division

RICHMOND, VA.—John R. Thompson has joined the V-C Bag Division of Virginia-Carolina Chemical Corp. as sales coordinator, according to D. Harold Johnson, division manager. He will make his headquarters at 99 Park Ave., New York.

In making the announcement, Mr. Johnson said the position of sales coordinator has been created as a part of the V-C Bag Division expansion program.

North Carolina Sales

RALEIGH, N. C. — Fertilizer sales in North Carolina during May totaled 211,294 tons, compared with 235,304 tons in May, 1956, according to the North Carolina Department of Agriculture. Sales during the first 11 months (July-May) of this fiscal year amounted to 1,450,384 tons, down from 1,561,226 tons in a comparable period a year earlier.

a chemical which acts as a barrier to flies, called a new approach to the insect control problem. The company says the product has the approval of the U.S. Department of Agriculture. Tabutrex is an odorless and colorless liquid that is claimed to be completely safe to use. Company officials said its properties prevent the fly from alighting on a dairy animal and therefore the pest cannot bite or in any way affect the well being of the animal. The company has completed four years of research and experiments on the product. For details check No. 6598 on the coupon and mail it to Croplife.

No. 6596—Pasted Valve Bag

A development in multiwall packaging is the "stepped-end" bag introduced by the Crown-Zellerbach Corp. The design is a pasted valve bag in which the ends of each ply are cut in a stepped relation to each other, thus allowing each ply to be pasted to itself in the ends. The bot-

tom of the bag is completely closed, while the top is closed except for one corner which is left open for filling on a valve packer. Designed to hold lime, some fertilizers and other products, the bags are claimed to offer these advantages: (1) stepped corners provide more flexibility and greater strength; (2) half sleeve insert insures positive spouting ability; (3) flexible construction of the valve opening allows spouting with one hand; (4) positive closure on corner opposite valve prevents blow-outs; and (5) outer ply slit and inner ply full diamond fold give maximum strength. For details check No. 6596 on the coupon and mail it to Croplife.

ON MONSANTO BOARD

ST. LOUIS—Dr. Ernest O. Lawrence of Berkeley, Cal., professor of physics and director of the University of California's Radiation Laboratory, has been elected a member of the board of directors of Monsanto Chemical Co., it was announced here by Edgar M. Queeny, chairman.

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der will transport maximum loads outside as well as in a warehouse, factory or shipping room. The unit has three speeds forward, one for reverse and is equipped with a heavy-duty transmission. The frame is of welded, square tubular steel and the unit is powered by a 2 h.p. Continental gas engine, with double positive clutch and finger tip safety brake control. Both wheels are powered. A manual snap-lock holds the load securely in place. No effort is required by the operator in loading, unloading or carrying, it is claimed. The unit has a gross weight of 275 lb. and the speed range is up to 4 m.p.h. Secure complete details by checking No. 5676 on the coupon and mailing

No. 6594—Vermiculite Folder

A folder entitled, "Granular Formulations with Vermiculite" has been issued by the Vermiculite Institute. The folder covers the preparation of granular insecticides, herbicides and fungicides with vermiculite as the carrier. Hints on handling and formulating specific products are included. Properties and advantages of using vermiculite are described in the folder. Secure the folder by checking No. 6594 on the coupon and mailing to Croplife.

No. 6595—Products Catalog

A 12-page products catalogue and informational booklet has been issued by the American Potash & Chemical Corp. The catalogue includes a description, properties and applications of nearly 70 chemicals marketed under the company's Trona trademark. Among major product groups included in the booklet are agricultural chemicals, boron chemicals, soda products, potassium compounds, bromines, lithium products, electrochemicals and refrigerants. A copy of the booklet will be sent without charge if you will check No. 6595 on the coupon and mail it to Croplife.

No. 6597—Lawn, Garden Guide

A new wall or desk chart, titled "Lawn and Garden Maintenance Guide," which shows how to control many gardening problems involving insects, plant diseases and weeds, has been issued by Diamond Black Leaf Co. The chart recommends one of eight products for treatment of more than 200 conditions. Easy-to-read, the large (16 by 32 in.), illustrated chart is broken down into four major areas—lawns, trees and shrubs, flowers, and vegetables—and gives a quick, ready reference to symptom, cause and treatment of the particular plant ailment. The chart is available without charge. Check No. 6597 on the coupon and mail it to Croplife.

No. 6598—Insect Control

The Glenn Chemical Co. has announced the production of Tabutrex,

TABLE 1—Nitrogen: estimated 1956-57 fertilizer supply compared with 1955-56 and 1954-55, U.S. and possessions¹, in tons of 2,000 lb. nitrogen content.

Item	1956-57 ^{2/}	1955-56	1954-55
U. S. Production			
Synthetic ammonia	2,023,000	1,945,000	1,791,000
By-product ammonia	178,000	201,000	183,000
Natural organics	30,000	30,000	30,000
Total	2,231,000	2,176,000	2,004,000
Imports	287,000	330,000	373,000
Exports	253,000	255,000	141,000
Difference	34,000	75,000	232,000
Available for fertilizer purposes	2,265,000	2,251,000	2,236,000

1/ These figures are based on rates of production, plus imports and minus exports.
2/ Estimated.

Source: Bureau of the Census "Facts for Industry M28A - Inorganic Chemicals" and Reports No. FT 110 and FT 410; Bureau of Mines monthly coke report "Coke and Coal Chemicals."

TABLE 3—Exports of selected nitrogenous materials for the 8-month period July, 1956-February, 1957, compared with the same period 1955-56, and their monetary value, by countries, in short tons of 2,000 lb. material.

AMMONIUM SULFATE	1956-57		1955-56	
	material	value	material	value
Cuba	33,214	\$ 1,024,848	23,270	\$ 883,347
Mexico	32,260	1,272,755	28,084	1,423,693
Pakistan	65,127	2,326,393	48,179	2,020,615
Korea	61,967	2,305,411	160,832	7,034,522
All others	266,615	10,287,410	185,321	7,872,713
Total	459,183	\$17,216,817	445,686	\$19,234,890

AMMONIUM NITRATE	1956-57		1955-56	
	material	value	material	value
Mexico	17,085	\$ 1,289,980	21,082	\$ 1,473,365
Greece	9,038	616,470	18,212	1,132,402
Korea	—	—	33,256	2,351,282
All others	4,091	204,057	661	43,363
Total	30,214	\$ 2,110,507	73,211	\$ 5,000,412

NITROGENOUS CHEMICAL MATERIALS ^{1/}	1956-57		1955-56	
	material	value	material	value
Canada	17,091	\$ 881,307	19,936	\$ 1,139,853
Mexico	9,005	996,429	3,572	444,360
Korea	26,869	1,393,213	6,621	672,059
All others	25,334	2,235,233	17,881	1,482,940
Total	78,299	\$ 5,506,182	48,010	\$ 3,739,212

1/ Includes urea, calcium nitrate, cyanamid, and various others.

Source: Bureau of the Census "Report No. FT 410"

TABLE 5—Phosphorus: estimated 1956-57 fertilizer supply compared with 1955-56 and 1954-55, U.S. and possessions, in tons of 2,000 lb. available phosphoric acid P₂O₅.

Item	1956-57 ^{1/}	1955-56	1954-55
U. S. Production			
Normal and enriched superphosphate	1,585,000	1,604,000	1,601,000
Concentrated superphosphate	736,000	775,000	661,000
All other ^{2/}	200,000	120,000	76,000
Total	2,521,000	2,499,000	2,338,000
Imports	54,000	56,000	61,000
Exports	223,000	153,000	154,000
Difference	169,000	97,000	93,000
Available for fertilizer purposes	2,352,000	2,402,000	2,245,000

1/ Based on 8 months' published figures and estimated rates of production for remainder of year.

2/ Includes wet-mixed base goods, basic slag, liquid phosphoric acid, and P₂O₅ content of mixed fertilizers.

Source: Bureau of the Census "Facts for Industry M28D - Superphosphate and Other Phosphatic Fertilizers" and Reports No. FT 110 and FT 410

FERTILIZER SITUATION

(Continued from page 1)

be realized in 1955, was for all purposes (agricultural and industrial). Included were such forms of nitrogen as synthetic ammonia, by-product ammonia, nitrates, phosphates, etc. Originally this expansion goal was set at 2,930,000 tons by 1955. It was amended in February, 1954 by the Office of Defense Mobilization, the production goal being raised to 3,500,000 tons by Jan. 1, 1957.

Rated annual capacity of synthetic ammonia producers alone neared the ODM goal by the end of 1955, when 28 companies with an annual capacity of 3,292,400 tons were reported on stream. This was an increase of more than 10% over the previous year when capacity was reported to be 2,986,800 tons. By May, 1957, U.S.

synthetic ammonia capacity by itself had exceeded the goal by nearly 300,000 tons of nitrogen (Table 4).

U.S. production of phosphates for fertilizer purposes in 1956-57 is currently estimated to be 2,521,000 tons, or slightly in excess of last year.

With the decrease in imports, and continued increase of exports, the supply available for fertilizer purposes is estimated to be 2,352,000 tons. For the nine months July, 1956-March 31, 1957 exports of normal and concentrated superphosphate were above the corresponding period in 1955-56 by 15.9% and 82.4% respectively.

Details of the estimated supply for

TABLE 2—Imports of nitrogenous materials for the 8-month period July, 1956-February, 1957, compared with the same period in 1955-56, in tons of 2,000 lb. nitrogen content.

Material	1956-57 (8 mos.)	1955-56 (8 mos.)
Ammonium sulfate	22,065	21,679
Ammonium nitrate	65,001	66,991
Calcium cyanamide	9,526	13,269
Calcium nitrate	4,897	6,564
Sodium nitrate	36,667	51,015
Urea	13,990	21,849
Ammonium phosphate	15,542	18,197
Other nitrogenous materials ^{1/}	1,413	2,217
Potassium nitrate	78	105
Potassium sodium nitrate	2,423	775
Prepared fertilizers ^{2/}	2,311	1,011
Total	173,913	203,672

1/ Includes estimated nitrogen content of guano, dried blood, castor bean pomace, and fish scrap.

2/ Includes estimated nitrogen content of compounded or chemically combined fertilizers.

Source: Bureau of the Census "Report No. FT 110"

TABLE 4—Rated annual capacity of synthetic ammonia producers for selected years 1940-1957, short tons N.

Year (as of Dec. 31):	Number of companies:	Number of plants:	Rated annual capacity:
1940	8	9	390,300
1950	13	19	1,500,000
1954	22	35	2,986,800
1955	28	42	3,292,400
1956	32	46	3,560,900
1957 ^{1/}	36	50	3,732,400

1/ Preliminary as of May 1957

Source: Business and Defense Services Administration

TABLE 6—Potash: estimated 1956-57 fertilizer supply compared with 1955-56 and 1954-55, U.S. and possessions, in tons of 2,000 lb. of potassium oxide K₂O.

Item	1956-57 ^{1/}	1955-56	1954-55
U. S. Production			
Muriates ^{2/}	1,800,000	1,739,000	1,687,000
Sulfates ^{2/}	111,000	106,000	107,000
Manure salts ^{2/}	3,000	2,000	1,000
Other ^{3/}	26,000	26,000	26,000
Total	1,940,000	1,872,000	1,821,000
Imports ^{4/}	184,000	170,000	139,000
Exports ^{4/}	250,000	180,000	91,000
Difference	66,000	10,000	48,000
Available for fertilizer purposes	1,874,000	1,862,000	1,869,000

1/ Based on actual production for 9 months and estimated rates for remainder of the year.

2/ Reported by the American Potash Institute.

3/ Includes potash content of natural or ganics and miscellaneous fertilizers.

4/ Bureau of the Census Reports No. FT 110 and FT 410.

6-57, with comparative data for two previous years, are shown in Table 5.

It is estimated that deliveries of agricultural potash from U.S. production for the U.S. and its possessions amounted to approximately 1,940,000 tons. There was an increase in imports of less than 10%, while exports showed a gain of approximately 39%. Details of the estimated fertilizer supply for 1956-57 are shown in Table 5.

W. P. Morris Named President of Duval Sulphur & Potash

HOUSTON—W. P. Morris, executive vice president of the Duval Sulphur & Potash Co., has been elected president of the company by the board of directors to succeed the late George F. Zoffman, who died June 5.

Mr. Morris was elected executive vice president and director of the company last March shortly before Mr. Zoffman was incapacitated by illness, and during the last three months was chief executive officer.

For 25 years, Mr. Morris has been identified with potash mining in New Mexico, in engineering and executive capacities.

The newly elected president joined Duval on Jan. 1, 1950, as general superintendent of potash operations at Carlsbad and was promoted to resident manager of Duval's potash division two years later.

On Sept. 1, 1954, Mr. Morris was transferred to Houston as vice president and assistant general manager to work with Mr. Zoffman who at that time had the title of president and general manager. Mr. Zoffman was elected chairman of the board, in addition to the office of president, last March, at which time Mr. Morris became executive vice president.

Mr. Morris was born in Ansted, W. Va. in 1907 and was graduated in 1930 from the Colorado School of Mines with a degree of engineer of mines. He was with the United States Potash Co. in Carlsbad from 1932 until 1940, when he transferred to the International Minerals & Chemical Corp., also in Carlsbad, first as mine engineer and later as mine superintendent. He was with International until he joined Duval in 1950.

The Duval Sulphur & Potash Co. was organized in 1926 and since 1938 has been producing and marketing sulphur from Orchard Dome in Fort Bend County, Texas. It has a potash mine and refinery in Eddy County, New Mexico, which has been in production since 1952, and is now constructing a plant in Pima County, Ariz., near Tucson to mine and process copper and molybdenum ores from the company's reserves in that area.



W. P. Morris

INSECT NOTES

(Continued from page 5)

maggot. Waltham reports 50-60% of the expected emergence of maggot flies from cages. It is too early to hit 2nd brood leafroller.

Cabbage and related crops now need regular applications to control worms and aphids. The second brood of leaf miner is now attacking beets and chard.—C. J. Gilgut and E. N. Wheeler.

Grain Pests Make News in South Dakota

BROOKINGS, S.D.—Grasshopper infestations are very spotted. Nymphal counts have been going down in several areas but there are still some isolated "hot spots" in alfalfa and along field margins.

Some small grain fields show heavy infestations of English grain

aphids. Usually these aphids do not injure the crop enough to warrant chemical treatment. They may cause some shriveled kernels. Unidentified aphids were observed on corn in Lawrence County. These were not corn leaf aphids. Although they were very thick in some fields no apparent damage was being done. No economic green bug infestations have been reported or observed.

Variegated cutworms are preventing regrowth of alfalfa in Hughes County and damaging alfalfa in Bennett County. These worms are widespread in the state in alfalfa and in gardens and will no doubt cause considerable damage to the second hay crop.—John A. Lofgren.

Nebraska Expects Armyworms Soon

LINCOLN, NEB.—(July 8)—Infestations of armyworms could occur within the next 2 or 3 weeks, accord-

ing to Robert E. Roselle, extension entomologist at the University of Nebraska. Moths caught in light traps at the University farms indicate that infestations could occur anywhere in eastern and central Nebraska, it is reported.

Peach Disease Causes Damage in South Carolina

SPARTANBURG, S.C.—The South Carolina State Crop Pest Commission has declared war on phony peach disease, and is urging growers to take stern measures to prevent the spread of the disease in their orchards.

"Now or Never" for Cotton

CLEMSON, S.C.—The Clemson Extension Cotton Committee has cautioned cotton growers that it is "now or never" so far as saving this year's cotton crop from boll weevil damage.

Reports from county agents indicate that because of the continued rains and cloudy weather the threat of boll weevil damage is serious.

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The regional circulation of this issue is concentrated in the Southern states.

SPECIAL ISSUE OBSERVATION . . .

Pasture and Range Land Development Has Big Fertilizer, Herbicide Potential

Why should Croplife devote so much attention in this issue and the three subsequent ones, to the subject of off-season fertilization and maintenance of pastures and range lands? Are there not other topics just as important?

No doubt other subjects could have been chosen just as well, but probably there are but few in which more significance lies. The shift in acreages and the problems faced by farmers as to how they might increase incomes in the face of unfavorable conditions creates a tailor-made situation where pasture and range lands can play an important part.

During the recent two-day tour of the Minnesota sub-committee of the Middle West Soil Improvement Committee, farmers were visited who had taken the advice of county agents and University extension people and had invested in a fertilization program in their pastures. One was proud of the fact that he had been the first in his county to practice rotation of pastures; another declared that he was "amazed" at the difference between the fertilized and the check plots on his land. "If I hadn't seen it with my own eyes," he said, "I never would have believed it."

Because the concept of pasture fertilization in the off-season is new to many, as is the idea of keeping such lands free from unwanted weeds and other growth, it seems appropriate to review some of the factors involved.

Albert W. Crain, associate pasture specialist at the Texas A.&M. College System, calculates that a ton of grass hay contains approximately 30 lb. nitrogen, 10 lb. phosphoric acid, and 30 lb. potassium. This is equivalent to 100 lbs. ammonium nitrate, 50 lb. 20% superphosphate and 50 lb. 60% muriate of potash. A ton of legume hay contains about 25% more nitrogen, phosphoric acid and potash than grass hay, so the amount of fertilizer to apply will be influenced by the amount of forage needed, the species in the pasture and the amount of moisture available.

"It requires about four acre-inches of water to produce a ton of grass hay," he says, "and about six acre-inches to produce a ton of legume hay. Therefore, plant food should be applied to pastures in accordance with expected rainfall as well as soil and plant needs."

He points out that plants make inefficient use of water if the supply of nitrogen, phosphate, or other plant food is deficient. On the other hand, more forage of better quality is produced with less water when plenty of plant food is available.

Arguments for off-season fertilization are many and potent. It gives a better spread of work over the year, saves an extra spring operation when plant food is put on in the fall where applicable, machinery pulls easier and does less damage when the soil is in its best physical condition, and by the same token, larger machines can be used to economize on time and labor.

Late summer or fall top-dressing helps to hold the legume in grass-legume mixtures, and when fertilizer purchases are made at times other than the busy spring season, one can get the exact fertilizer ratio and grade he desires. Oftentimes this is at a reduced cost.

Along with the adequate fertilization of pastures and range lands is the problem of keeping areas free from unwanted brush and weeds. According to A. H. Walker, extension range specialist of the Texas Agricultural Experiment Station, brush and weeds cause more production loss in Texas each year than soil erosion or all types of

insects. "Therefore, brush control is one of the biggest problems faced by the farmer and ranchman," he says. "Undesirable trees and brush use up water and minerals which should be used by forage growth for livestock production. Brush controlled areas have produced twice as much grass as untreated ones even under drouth conditions. This means more pounds of meat from each acre," he said.

"Sometimes the brush infestation is so heavy that livestock handling is made difficult. Often this brush grows on some of the most productive land. In timber areas, hardwoods often hold back or crowd out desirable pine trees. Control of hardwoods to increase the quantity and quality of forage production, makes livestock handling easier and, in forest areas to release timber growth, is both practical and profitable. Control of hardwoods without following range management practices such as proper stocking, deferred and rotation grazing and in some cases, reseedling and fertilization, will not result in permanent benefits to the pasture."

The entire trade stands to gain from the added attention being given presently to pastures and range land. The fertilizer potential is so great that it could have a profound effect on the over all consumption of plant food in the U.S. When one considers millions of the acres now being used for pasture can be fertilized and cleared of unwanted brush and weeds with good profit for the farmer, the question comes up as to why the concept is not given universal acceptance.

Like any worthwhile project, it must go through the various stages of education, demonstration, and publicity before reaching the point where it is generally accepted. It may take awhile . . . but it is an objective of such proportions as to be well worth the effort.

This issue of Croplife, along with the three succeeding ones, contains recommendations, selling ideas and other information of interest to the trade. We hope this will prove profitable to our readers.

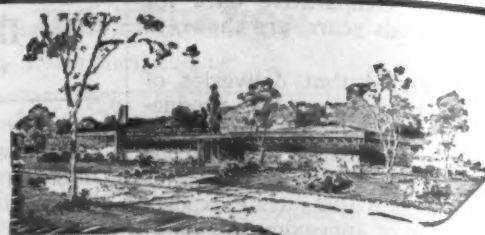
Cicadas Visit Again

Brood XIV of the so-called 17-year locusts is gaining a lot of publicity of late. How much damage do these infrequent infestations cause? Entomologists report that the female cicada lays eggs in twigs and small branches, injuring the tree. This she does in silence, with the males making all the noise.

Several superstitions about cicadas are extant. One is that if a person is stung by a cicada, his life is endangered. Actually, the insect can't sting. Another superstition has it that the markings on the wings in the shape of a letter "W" foretells a war.

Viewpoint

"The tremendous educational campaign that would be part of such a changeover would be worth millions of dollars to the industry by making plant foods the number one topic in every publication and every source of farm information for several years. Discussions of the matter would provide every fertilizer salesman with a conversational gambit, a foot in the door, and a pin on which to hang the particular fertilizer program that he wants to present."—Robert Z. Rollins, chief, California Bureau of Chemistry, in comments at the California Fertilizer Assn. annual meeting on the proposed change in fertilizer guarantees.



Croplife's Home Office

Croplife



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

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DONALD NETH

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EDITORIAL STAFF—John Cipperly, Washington Correspondent; George E. Swarbrick, Canadian and Overseas Editor; Emmet J. Hoffman, Marketing Editor; Walter C. Smith, Research Director.

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EASTERN STATES—Paul L. Dittmore, Eastern Advertising Sales Manager; James W. Miller and George W. Potts, Advertising Sales Representatives; Suite 3214, 551 Fifth Ave., New York 17, N.Y. (Tel. Murray Hill 2-2185).

CENTRAL STATES—Don E. Rogers, Manager; Henry S. French, Assistant Manager; 2272 Board of Trade Bldg., 141 W. Jackson Blvd., Chicago 4, Ill. (Tel. Harrison 7-6782).

SOUTHWEST—Martin E. Newell, Manager; Thomas E. Letch, Assistant Manager; 612 Board of Trade Bldg., Kansas City 5, Mo. (Tel. Victor 2-1350).

NORTHWEST—Paul A. Anderson, Advertising Sales Representative, P.O. Box 67, Minneapolis 1, Minn. (Tel. Federal 2-0575).

WASHINGTON CORRESPONDENT—John Cipperly, 604 Hibbs Bldg., Washington, D. C. (Tel. Republic 7-8534).

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MEETING MEMOS

July 15-16—New York Fertilizer Conference, Cornell University, Ithaca, N.Y.

Sept. 4—Kentucky Fertilizer Conference, Campbell House, Lexington, Ky

1958

June 25-27—Pacific Branch, Entomological Society of America, San Diego, Cal.

EDITOR'S NOTE—The listings above are appearing in this column for the first time this week.

July 17-19—Southwestern Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

July 18—Ohio Agricultural Ammonia Assn., Everglades Restaurant, Columbus, Ohio, John Studer, Findlay Ice & Fuel Co., Findlay, Ohio, Secretary.

July 30-31—Fertilizer Meetings and Experiment Station Tours, Auburn, Ala. and Thorsby, Ala., Sponsored by the Alabama Agricultural Experiment Station and Alabama Soil Fertility Society.

Aug. 13-14—Ohio Pesticide Institute, Summer Meeting, Ohio Agricultural Experiment Station, Wooster, Ohio, J. D. Wilson, Ohio Agricultural Experiment Station, Secretary.

Aug. 28-31—Soil Conservation Society of America, Annual Convention, Asilomar, Cal.

Sept. 4-6—National Agricultural Chemicals Assn., Annual Meeting Essex & Sussex, Spring Lake, N.J., L. S. Hitchner, 1145 19th St. N.W., Washington 6, D.C., Executive Secretary.

Sept. 5-6—Great Lakes States Anhydrous Ammonia Meeting, Michigan State University, East Lansing, Mich.

Sept. 8-15—International Congress of Crop Protection, Hamburg, Germany.

Sept. 24-25—New England Fertilizer Conference, Bald Peak, Colony Club, Melvin Village, N.H.

Oct. 2-4—Eleventh Annual Beltwide Cotton Mechanization Conference, Shreveport, La.

Oct. 3—New Jersey Fertilizer Conference, Rutgers University, New Brunswick, N.J.

Oct. 3-5—Pacific Northwest Plant Food Assn., Annual Convention, Sun Valley, Idaho, Leon S. Jackson, Lewis Bldg., Portland 4, Ore., Secretary.

Oct. 7-8—Western Agricultural Chemicals Assn., Fall Meeting, Villa Hotel, San Mateo, Cal., O. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Oct. 14—Sixth Annual Sales Clinic of the Salesmen's Assn., American Chemical Society, Hotel Roosevelt, New York.

Oct. 15—Association of Official Agricultural Chemists, 71st Annual Meeting, Washington, D.C., Dr. William Horwitz, Box 540, Benjamin Franklin Station, Washington, D.C., secretary-treasurer.

Oct. 17—Conference on Chemical Control Procedures for Industry Chemical Control Analysts, Shoreham Hotel, Washington, D.C. Sponsored by National Plant Food Institute.

Oct. 18—Association of American Fertilizer Control Officials (States Relations Committee, 8 p.m. Oct. 17), Shoreham Hotel, Washington, D.C., B. D. Cloaninger, Box 392, Clemson, S.C., Secretary-Treasurer.

Oct. 29-30—Seventh Annual Northwest Garden Supply Trade Show of

Oregon Feed & Seed Dealers Assn., Portland, Ore. Masonic Temple.

Oct. 29-31—Entomological Society of Canada and Entomological Society of Alberta, Annual Meetings, Lethbridge, Alberta.

Oct. 31-Nov. 1—Second Annual Southern Fertilizer Conference and Second Annual Southern Soil Fertility Conference, Dinkler Plaza Hotel, Atlanta, Ga.

Nov. 3-5—California Fertilizer Assn. 34th Annual Convention, St. Francis Hotel, San Francisco, Sidney H. Bierly, General Manager, 475 Huntington Drive, San Marino 9, Cal.

Nov. 6-8—Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D.C.

Nov. 17-19—National Fertilizer Solutions Assn., Annual Convention, Netherland-Hilton Hotel, Cincinnati, Muriel F. Collie, 2217 Tribune Tower, Chicago 11, Ill.

Dec. 1-3—Southern Seedsman's Assn., Jung Hotel, New Orleans.

Dec. 2-5—Entomological Society of America, 5th Annual Meeting, Hotel Peabody, Memphis, Tenn., R. H. Nelson, 1530 P St., N.W., Washington 5, D.C., Executive Secretary.

Dec. 2-5—Cotton States Branch, Entomological Society of America, 32nd Annual Meeting, Hotel Peabody, Memphis, Tenn., M. E. Merkl, Box 202, Leland, Miss., Secretary-Treasurer.

Dec. 9-12—Chemical Specialties Manufacturers Assn., Hollywood Beach Hotel, Hollywood, Fla.

Dec. 10-12—North Central Weed Control Conference, 14th Annual Meeting, Hotel Savory, Des Moines, Iowa, Lyle A. Derscheid, agronomy department, South Dakota State College, Brookings, Program Chairman.

Dec. 11-13—Agricultural Ammonia Institute, Seventh Annual Meeting, Hotel Marion, Little Rock, Ark., Jack F. Criswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 12-13—Beltwide Cotton Production Conference, Hotel Peabody, Memphis, Tenn.

1958

Jan. 7-8—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 13-15, 1958—Weed Society of America and Southern Weed Conference, joint meeting, Peabody Hotel, Memphis, Tenn.

Jan. 21-23—California Weed Conference, San Jose, Cal.

Feb. 13-14—Agronomists-Industry Joint Meeting, Edgewater Beach Hotel, Chicago, sponsored by the Middle West Soil Improvement Committee, Z. H. Beers, 228 N. LaSalle St., Chicago 1, Ill., Executive Secretary.

March 4-5—Western Cotton Production Conference, Hotel Cortez, El Paso, Texas, Conference Sponsored by the National Cotton Council and the Five State Cotton Growers Assn.

June 15-18—National Plant Food Institute, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

July 18-19—Southwest Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

NAME CHANGE

LOGAN, UTAH—On July 1 Utah State Agricultural College officially became Utah State University. The name was changed under a bill brought before the Utah legislature, and with the approval of the board of trustees, faculty and students.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15c per word; minimum charge \$2.25. Situations wanted, 10c a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20c per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Advertisements of new machinery, products and services accepted for insertion at minimum rate of \$10 per column inch.

All Want Ads cash with order.

HELP WANTED

FERTILIZER SALES—A manufacturer and wholesaler of excellent standing offers an opportunity to aggressive men experienced in mixed fertilizer sales. Prefer some college training and also some knowledge of fertilizers. The drought has been broken, the coming years are taking us out of a dry cycle, and the fertilizer field is still in its infancy. Salary, bonus, and cars furnished for Iowa territories. Confidentially state your age, personal data, experience, salary requirements, and education. Write Ad No. 2898, Croplife, Minneapolis 1, Minn.

HELP WANTED

WANTED — MANAGER FOR MODERN fertilizer plant with granulation equipment. Must know fertilizer business and take responsibility for manufacture and sales. Address Ad No. 2875, Croplife, Minneapolis 1, Minn.

Croplife Want Ads...
Get Results

For Sale for Prompt Delivery

1 MODIFIED BROADFIELD SUPERPHOSPHATE Unit—capacity 30 tons per hour.

2 STURTEVANT Mixing Machines (one with bagging hopper), 2-ton drum, with Nitrogen Solution equipment—capacity 60 tons per hour.

Large stock of spare parts for fertilizer plant. New parts 20% discount, freight paid to your plant. Write for Catalogue.

Several late model Payloaders.

Call or write:

Ashmead F. Pringle, Jr.,
Post Office Box 904
Telephone: 2-7016
Charleston, South Carolina

DUSTER SAVED

ANTIOCH, CAL.—A crop dusting pilot was saved from death recently by a star high school athlete who pulled the young pilot to safety after his plane crashed. Mark Terrapin, 23, crashed as his plane was coming in for a landing following dusting and chemical spraying activities in nearby

fields. A sudden shift of wind was reported as responsible for the crash. Carroll Elkins, 17, of Antioch, weighing hardly more than half the 200 lb. of Mr. Terrapin, pulled the pilot to safety. The pilot was not injured seriously, and suffered from the loss of several teeth and severe burns about the hands and arms.

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How Hercules Helps **YOU** Sell More Toxaphene





This toxaphene advertisement is typical of those being read by more than one million farmers—regular readers of such agricultural publications as "Progressive Farmer," "Farm & Ranch," and other farm magazines. Eye-catching advertisements like this plus local toxaphene promotion can help you increase toxaphene sales and profits.

Other ads in the series will emphasize the importance of toxaphene in controlling specific insect pests on a variety of crops. This continuing advertising program in leading agricultural publications, plus local radio and television announcements, backed up by your use of the many dealer aids available from Hercules, can help make '57 a banner sales year for you.

HX87-7

Earlier this year we suggested cotton farmers could avoid late season insect trouble  by control of early season insects. This permitted cotton to set the maximum number of squares so bolls  could be produced early.

Later, at the first bloom stage  we reminded farmers that 90% of the crop could be set in the following four or five weeks, and that every boll weevil killed then  would greatly reduce the late weevil population.

Farmers who have followed this program are  proving again that toxaphene  is the keystone of a successful insect control program. If you are confused  by the reports of insecticide performance, examine the fields in your locality which have been protected through the season by toxaphene  formulations. For farmers who haven't followed the early program, insect control will be more difficult, but the job can be done with a hard-hitting program using toxaphene as the keystone. It's not too late for toxaphene!

TOXAPHENE

a product of the Agricultural Chemicals Division
HERCULES POWDER COMPANY
900 Market Street, Wilmington 99, Delaware

